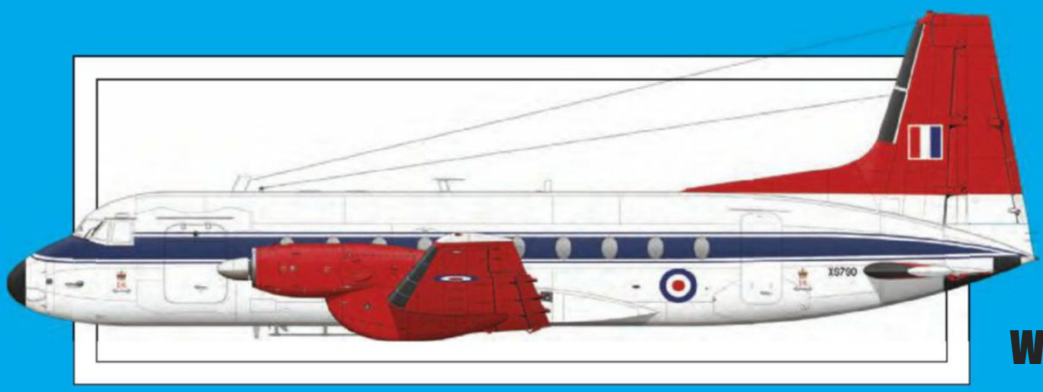


WARPAINT SERIES No.151

Hawker Siddeley 748 & Andover

In military service

By Adrian M. Balch

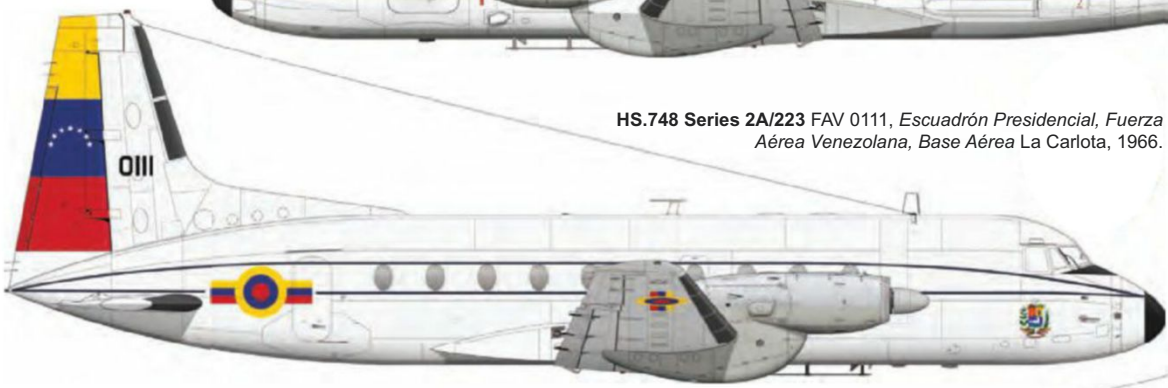
Andover C.1, XS608, of 46 Squadron, RAF over 'The Needles' on the Isle of Wight in 1971. (*MoD photo*)

HS.748 Series 2A/221 T-01, *Agrupación Aérea Presidencial, Fuerza Aérea Argentina*, Aeroparque Jorge Newbery, late 1960s.

HS.748 Series 2A/285LFD FAE 738, *Escuadrón de Transporte 1112, Ala de Transporte 11, Fuerza Aérea Ecuatoriana, Base Aérea* Mariscal Sucre (Quito), 1982.

HS.748 Series 2A/285LFD FAE 739, *Escuadrón de Transporte 1112, Ala de Transporte 11, Fuerza Aérea Ecuatoriana, Base Aérea* Mariscal Sucre (Quito), 2007.

HS.748 Series 2A/223 FAV 0111, *Escuadrón Presidencial, Fuerza Aérea Venezolana, Base Aérea* La Carlota, 1966.



HS.748 Series 2A/215 TR-0203, *Escuadrón Aeronaval de Transporte 2, Aviación Naval Venezolana, Estación Aeronaval* La Carlota, 1978.

HS.748 Series 2A/260 FAC 1104, SATENA, *Fuerza Aérea Colombiana*, Medellín Enrique Olaya Herrera Airport, August 1974.

Hawker Siddeley 748 & Andover

All photos are by the author or from the author's collection unless otherwise credited

In military service

By Adrian M. Balch

The Hawker Siddeley Andover C.1 stemmed from the HS 748, a medium-sized turboprop airliner designed and initially produced by the British aircraft manufacturer Avro, aimed at the DC-3 replacement market. It was the last aircraft to be developed by Avro prior to its absorption into Hawker Siddeley. In October 1958, AVRO was integrated into Hawker Siddeley Aviation through a series of mergers involving several British aircraft companies.

DESIGN AND DEVELOPMENT

In 1957, the then-Minister of Defence Duncan Sandys released a Defence White Paper stating the termination of almost all manned military aircraft development in favour of guided missiles! This prompted Avro to turn to the civilian airliner market, after years of military aircraft production such as the Lancaster, Lincoln, Shackleton and Vulcan. In 1958, they commenced work on a new design, which eventually emerged as the Avro 748, which was announced to the public on 9 January 1959.

However, the four-engined Vickers Viscount had already secured the majority of the short-haul market, so Avro decided that to design a smaller regional airliner, powered by a pair of Rolls-Royce Dart turboprop engines, the same engines that had been proved successful in the Viscount.

The large numbers of piston-engined Douglas DC-3s in service worldwide were nearly at the end of their economic life, so the new design was pitched as a replacement for the type. It had to be capable of operating from any airfield that the DC-3 could be operated from.

The requirement of airlines for such a type indicated that an approximate forty passengers seating capacity would be optimal. Initially, it was planned to be a twenty - thirty seat airliner, with a similar configuration to the future rival Fokker F27 Friendship.

However, following discussions with several potential customers, the company opted for a low-wing configuration seating up to forty-four passengers in four-abreast seating with central gangway. Also, the proposed airliner had to be in compliance with both British and American standards of airworthiness; accordingly, it would be one of the first medium-sized aircraft to incorporate fail-safe design principles for its structure in place of the then-common safe-life principles being practiced. The airframe effectively lacked any imposed lifespan. Development tests involved being immersed in a water tank for up to the equivalent of 100,000 flight hours. Competing with similar types as the

Above and below: The AVRO 748 prototype, G-APZV, being demonstrated at the Farnborough Air Show in September 1960.

Published by Guideline Publications Limited
Dunstable Business Centre, Office Suite No.2
Blackburn Road, Houghton Regis
Bedfordshire LU5 5BQ
Tel: +44 (0)1582 668411
Email: tom@guidelinepublications.co.uk
www.guidelinepublicatons.co.uk
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Right: The first order came from Lympne-based Skyways Coach-Air, with G-ARMV being shown at Farnborough in September 1961.

Fokker F.27 and Handley Page Herald, the design had to possess a high level of performance, including short take-off and landing (STOL) capabilities and overall ruggedness.

The result was an all-metal, low-wing, pressurised monoplane, of orthodox appearance and Avro fail-safe construction with circular-section fuselage. The outer panels of the two-spar mainplane were attached to a centre section built integral with the fuselage, with adequate ground clearance for the large diameter propellers, avoiding cut-outs in the spars The Dart engines were mounted high up in close-fitting cowlings with the jet exhaust pipes passing over the wing. The forward retracting twin-wheel undercarriage was housed in a bulbous compartment ahead of the leading edge, creating the now familiar Avro 748 cranked engine nacelle.

The prototype AVRO 748, G-APZV, first flew from Woodford on 24 June 1960, piloted by chief test pilot J.G.Harrison, making its public debut at the Farnborough Air Show in September that year.

Immediately, the first airline to order the type was Lympne-based Skyways Coach-Air in 1961, which was already looking to replace its DC-3s. Delivered in 1961, G-ARMV was demonstrated in their colours at the Farnborough Air Show, also in September of that year.

INTO PRODUCTION

Initial orders were very encouraging and production got underway at Avro's Manchester plant at Chadderton. With no airfield there, a production line was set up for initial assembly and then the airframes were roaded some twenty miles to Woodford aerodrome for final assembly, painting and delivery.

The first overseas order came from Aerolíneas Argentinas, which received a production model in January 1962, with the aircraft entering scheduled service in Argentina in April.

In 1963, Newcastle-based BKS Air Transport ordered the Avro 748, receiving its first aircraft, G-ARRW, in April of that year. The airline later received a second and third aircraft of the type in March and July 1965, replacing its DC-3s.

This was just the start, as orders started coming in from all over the world. Between 1960-1988, a total of 381 Hawker Siddeley HS 748s were sold and manufactured, including eighty-nine aircraft assembled under license in India by Hindustan Aeronautics Ltd (HAL). The aircraft had nearly eighty civil and military operators in fifty countries, with major commercial sales including 259 aircraft to export customers.

During the early 1960s, Avro's individual identity within the Hawker Siddeley Group disappeared after which the airliner was marketed by the parent company as the HS 748.

Competition for a DC-3 replacement was rife, as Fokker were keen to market the Dutch-built F27 Friendship, which was well advanced. However, Avro decided to focus its efforts upon achieving a more rugged design that offered superior short take-off and landing (STOL) performance, which enabled the prospective airliner to be operated from smaller and more rudimentary airports, including those without modern runways. This STOL capability was achieved with several features, including the adoption of a long, high lift wing, which was fitted with a unique single slot flap with a hinged flap tab at the trailing edge. This wing was mounted low on the fuselage with dihedral from the root, allowing for good overall ground clearance and the easy mounting of strong landing gear. There was a choice of three take-off flap settings to select the level of STOL performance required.

For ease of maintenance, the engines were provided with an internal ignition system, with various other systems and structures throughout the airliner enabling easy inspection and maintenance, even when at unprepared airstrips with limited equipment available. With such favourable qualities, the 748 quickly attracted the orders from a variety of airlines, especially those that typically operated in remote areas, which has been attributed to its ability to operate from short, rough fields without any ground service equipment while being capable of uplifting payloads in excess of 10,000lb.

Following completion of the initial batch of series 1 aircraft, production transitioned to the improved series 2, which was largely similar to its predecessor, principally benefiting from the adoption of more powerful Dart RDa 7 Mk 531 engines and an increased gross weight. During 1960, it was reported that the basic price for a new Avro 748 Series 1 was £176,000, while that of the corresponding Avro 748 Series 2 was reportedly £196,000.

The series 2A was introduced in 1967, which was still powered by Mk. 532 engines, but with a further increase in gross weight. Several new options were made available to customers in the early 1970s, including a large freight door in the rear cabin and a strengthened cabin floor. This appealed to military and cargo operators, resulting in further military orders.

The Series 2B was announced in 1979, which included a four-foot increase in wingspan, Mk 536-2 engines, along with an improved passenger cabin, an improved fuel, water methanol injection system and engine fire protection systems.

Manufacture of the 748 was also performed overseas, following an early order placed by India for the type. Both the 748 Series 1 and Series 2 were licence-produced by Indian manufacturer Hindustan

Left: The first HS748 for the Royal Australian Air Force heads the production line at Chadderton in 1966. ***(BAe photo)***

Aeronautics (HAL) at Bangalore, which were designated HAL-748. On 1 November 1961, the first Indian-assembled HAL-748 made its initial flight. By the end of production, HAL had completed eighty-nine Indian-built aircraft, seventy-two of which were for the Indian Air Force and seventeen were delivered to national flag carrier Indian Airlines *(see 'India' in military operators section below)*.

Sales to civilian operators were relatively brisk within its first decade of the type's availability, with 312 having been sold by 1976 of which 259 had been for export customers. Meanwhile, India had emerged as the largest single market for the airliner with Indian Airlines being the largest HS 748 operator with a fleet of twenty-six aircraft. It had been popular with numerous commercial operators throughout the Caribbean and Latin America alone, sixty-three HS 748s being in service with eleven separate operators.

The main competition was by the Fokker F.27 Friendship, an example of which was Philippine Airlines who had been the F27's largest operator prior to its decision to replace both it and its remaining DC-3s with the HS 748, which represented a significant sales coup for Hawker-Siddeley. Other major civil operators included Aerolíneas Argentinas, VARIG, Thai Airways and LAN-Chile, among others. One advantage over it's competitors, was the HS748's STOL capabilities in services, with over one-third of all scheduled operations reportedly involved operations from rough airstrips with rudimentary facilities.

In a typical passenger layout, the HS 748 can accommodate around 40–48 economy class seats in a four abreast layout. However, many later-serving passenger HS 748s were typically operated as quick change combis, which are fitted with a movable bulkhead that divides the main cabin, housing between four and forty seats in the rear section, while cargo located in the forward section. The 748 has also been widely used as a pure freighter, having a typical maximum payload of about 12,000lbs.

Below: G-AZJH, the first HS748 2A fitted with the Large Freight Door, near Woodford in January 1972. It was later sold to the Nepal Government as 9N-RAC, transferred to the Royal Nepal Army Air Wing as RAN-20. ***(BAe photo)***

THE MILITARY HS748

While the HS 748 was originally intended to be marketed principally towards the civilian market, numerous examples were sold to military customers around the world. Another key market for the HS 748 was the executive role; the type was repeatedly procured to serve as the designated aircraft for various heads of state, including those of Argentina, Belgium, Brazil, India, Venezuela, Zambia, Thailand and the United Kingdom.

To promote further sales, particularly aimed at military customers, there were several variants planned:

Avro 748E: A stretched Series 2 with 6ft fuselage extension to operate at an all-up weight of 43,000Ib and carry up to sixty passengers.

Avro 748 Super E: High performance variant of the above powered by two 2,400hp Rolls-Royce Dart R.Da.10 turboprops.

Avro 748F: A freight version of the Series 1 with freight door and strengthened floor.

Avro 757: A military freight version of the Series 1 to meet Indian Air Force requirements. Also known as the Avro 748M.

Avro 758: A high-wing assault version of the Avro 757 for the Indian Air Force with a two-foot increase in fuselage diameter for the Indian Air Force. It would include swing-tail rear loading, underslung nacelles and undercarriage retracting into the fuselage. Wing span would be 97ft 4in and all-up weight 43,600lb. Cruise speed 230 knots at 20,000ft.

Avro 778: A version with two aft-mounted 7,000lb st. Bristol BS.75 turbofan engines using the Avro 748E structure but with reduced drag for high speed. All-up weight 50,000lb. During 1976, the company was studying options for equipping a model of the HS 748 with turbofan engines, and that a preferred powerplant at that point was the Rolls-Royce/SNECMA M45H, as used on the VFW-Fokker 614 jetliner. Other changes would also need to have been incorporated, including the addition of lift dumpers and adaptive brakes for better landing performance, while electrical, hydraulic and air conditioning systems would be redesigned. Another requirement would mean a dihedral would have to be introduced to keep the tailplane clear of the jet exhaust. It was envisioned that the re-engined aircraft could offer larger seating arrangements of up to 64 seats.

While all of these variants remained only design projects, a heavier more powerful version of the 748 with upswept tail and rear loading doors was on the drawing boards as the Avro 780 and was announced as the Avro 748MF (Military Freighter), which became the Andover C.1.

Hawker Siddeley was pleased with all the civilian airline orders, but was very keen for sales of the HS748 as a military replacement for the many air arms still using Douglas C-47 Dakotas and similar piston-engined types. G-AZJH was a convertible passenger/freight version with a large rear cargo door giving entry width of 8ft 9in first flew at Woodford on 31 December 1971. It was demonstrated at the Farnborough Air Show in September 1972, following which it was then camouflaged and displayed at the 1973 Paris Air Show. It was then demonstrated to the Royal Malaysian Air Force, who were already operating Handley Page Heralds so did not place an order for this HS748 variant. However, the Belgian Air Force did and ordered three. Other freight door equipped aircraft were supplied to a number of operators including the air forces of Brazil and Ecuador.

Another military variant was proposed as

Above: The HS748 Coastguarder prototype demonstrator, G-BCDZ, leaps into the air during the Farnborough Air Show on 3 September 1978.

Left: G-BDVH, the second HS748 2A-301 'multi-role' demonstrator fitted with the Large Freight Door, seen at Farnborough on 31 August 1980. This aircraft was later sold to the Sri Lanka Air Force. *(Richard Hamblin)*

a maritime surveillance version of the HS748 called the 'Coastguarder'. In this form G-BCDZ first flew from Chester on 18 February 1977 as a maritime patrol aircraft, equipped with a ventral radome, bubble observation windows on each side and increased fuel capacity to give an eleven-hour patrol endurance. It carried a crew of five, two pilots, one tactical navigator and two observers. It made its public debut at the International Air Tattoo at Greenham Common in June 1977, then was demonstrated at the Paris Air Show. It was further demonstrated at the Farnborough Air Show in September 1978 and again at the Paris Air Show the following year. However, no orders were received for this variant and the prototype reverted to airline configuration.

Freight-door equipped HS-748 G-BDVH, was built in 1976, and first flew that year as a company demonstrator for Hawker Siddeley (later British Aerospace). In 1977, it was given a two-tone desert camouflage scheme and displayed at the Paris Air Show as a multi-role military demonstrator (748MAR). Wearing a ventral radome below the forward fuselage, it was then repainted in a green and brown camouflage and appeared at the Farnborough Air Show in September 1980, at the International Air Tattoo at Greenham Common in June 1981 and again at Farnborough in 1982 in an attempt to attract more military customers. It was eventually sold to the Sri Lanka Air Force in 1986.

During 1988, production of the HS 748 was terminated, while the last British-assembled aircraft made its first flight on 1 December of that year.

Centre left: T-01, the sole HS748 for the Argentine Air Force, at Woodford in December 1966.

Left: A10-595, the first HS748 for the RAAF on a pre-delivery flight from Woodford in January 1967. *(BAe photo)*

Right: A10-604, in service with the School of Air Navigation at East Sale in December 1971. Note the serial has now been moved from the fuselage rear on to the tail fin.

Centre right: A10-606, from the RAAF School of Air Navigation, seen visiting Christchurch, NZ on 4 May 1999. Note subtle changes – the badges on the tail and nose and cockpit framing are now black. ***(John Mounce)***

IN MILITARY SERVICE WITH:

Argentina

A single Hawker Siddeley HS 748 Srs.2 was ordered by the *Fuerza Aerea Argentina* as a VIP and presidential transport and delivered in December 1966. Initially with the serial T-01, it was later reserialled T-02 and then T-0' before being sold in September 1978 as C-GQWO to Austin Airways in Canada. Colour scheme was gloss light grey overall with a turquoise cheatline bordered by white and gold pin-stripes.

Australia

Royal Australian Air Force

The Royal Australian Air Force procured a fleet of ten HS748s, the first of which was delivered in 1968. These were used by the School of Navigation Training and as VIP transports by No.34 Squadron based at East Sale, Victoria. All aircraft were fitted with a navigator's station immediately behind the cockpit, opposite the cargo door and with a sextant in the roof panel for Astral navigation. Also a periscope/driftmeter was installed in the floor at the same station. Used as flying classrooms for the training of navigation and air electronics officers (AEOs) for the RAAF and observers for the Royal Australian Navy. For training, three navigator stations were located at the front for one instructor and two students, while at the rear behind the

Right: RAAF HS748 A10-605, now in sombre overall grey 'toned-down' scheme in February 2001, seen at Wellington, New Zealand. ***(John Mounce)***

Below: RAAF HS748 line-up shot at East Sale, Victoria in April 1981. ***(Tom Singfield)***

Above and left: The only formation display team to operate the HS748 were 'The Howlettes' from the RAAF School of Air Navigation at East Sale in 1989. ***(RAAF official)***

observation section with bubble windows were three AEO sections. In the mid-1990s, the latter was replaced by a crew rest area with two double-seat units and a table. In 1998, an Airborne Navigation Training System upgrade was underway for the Srs.2/228s with two aircraft undergoing conversion and trials when it was decided to retire the whole fleet of 748s.

In 1989, a 'straight and level' formation display team was formed of four HS748s called 'The Howlettes', named after the noise made by eight Rolls-Royce Dart engines. They boasted they were the only aerobatic display team to use the HS748, which was not surprising!

Royal Australian Navy

The Royal Australian Navy (RAN) operated two HS 748s, N15-709 and N15-710, starting in 1973 and used initially in the transport role replacing Dakotas with 851 Squadron based with HMAS *Albatross* at Nowra, New South Wales. The type was used to deliver relief aid across Darwin and the Northern Territory, following Cyclone Tracy. Between 1978 and 1981, the two aircraft were modified extensively into Electronic Warfare (EW) trainers. Fitted with electronic countermeasures (ECM) jamming equipment and chaff dispensers, the aircraft were tasked as airborne trainers to simulate a hostile electronic warfare environment.

Left: N15-709, the first of two HS748s for the Royal Australian Navy on a pre-delivery flight over Blackpool in January 1973. ***(BAe photo)***

Right: N15-709 after delivery in service with the Royal Australian Navy seen at Brisbane on 25 July 1974. *(John Roger)*

Centre right: A long way from home! N15-709 again, seen on a very wet RAF Brize Norton apron on 7 November 1979, now wearing '800' nose codes and the badge of 851 Sqn on the tail.

On 31 August 1984, the squadron was disbanded and the aircraft transferred to 723 Squadron, also based at Nowra NAS, where they continued in a similar role. On 23 June 2000, the aircraft were withdrawn from use.

Colour scheme for both the RAAF and RAN operators was gloss white roof divided by an Oxford Blue cheatline and Light Aircraft Grey wings, tailplanes and belly. Roundels were in six positions with fin flash on the tail (RAAF only). Matt black cockpit anti-dazzle patch and de-icing boots on wings, tailplanes and tail fin. Roof titles were in red letters. Black serial numbers were applied to the rear fuselage on delivery, but these were later moved to the tail fin, as well as adding 'the last three' to the nose wheel doors. In service, several aircraft adopted unit badges on the tail.

By 1997, the RAAF HS748s had received a 'toned down' repaint in an overall gloss light grey finish with all lettering and national markings finished in darker shades of grey. The Royal Australian Navy HS748s followed but retained full-colour national insignia.

Belgium

On 8 April 1974, after a long search for a suitable replacement for the Douglas C-47B Dakota, the Belgian government decided to acquire three Hawker Siddeley HS748s. The HS.748-2A was equipped with a large cargo door on the left hand side and could be easily converted from cargo to passenger configuration in a minimum of time. The third Belgian Air Force HS-748, CS-03, was demonstrated at the Farnborough Air Show in September 1976.

Right: Royal Australian Navy HS748, N15-709 of 851 Sqn at an unknown location now sporting ventral radomes in June 1983 in anticipation of its transfer to 723 Sqn for electronic warfare support and VIP duties.

Below: To complete the story of N15-709, here it is with 723 Sqn Royal Australian Navy in overall grey toned-down scheme at Brisbane in December 1995. *(John Roger)*

Above: CS03, the third Belgian Air Force HS748 displaying its large side freight door. *(BAe photo)*

Left: CS01, the first of three HS748s for the Belgian Air Force, depicted on a pre-delivery flight in August 1976. Note it has only one roundel above the port wing (and one below the starboard wing). *(BAe photo)*

On 20 February 2002 the HS.748s were withdrawn from use when the Embraer replacement aircraft arrived. HS.748s CS-01 and CS-02 were donated to the government of Benin in June-July 2002 becoming TY-21A and TY-21B respectively, while CS03 was also transferred to Benin to serve as a spare-parts resource, but was reported scrapped in November 2020. Colour scheme of the Belgian 748s was initially a disruptive camouflage pattern of olive green/dark earth upper surfaces and light grey undersides. Belgian roundels were carried in four position, two either side of the rear fuselage and just one above the port wing and one below the starboard wing. By 1988, it was decided that these aircraft no longer needed to be camouflaged and they were repainted in a smart gloss white finish with light grey undersides, with a thin light blue cheatline below the windows. The fuselage roundels were omitted but now Belgian roundels were applied above and below both wings. Operated by 21 Squadron from Melsbroek, Brussels, whose insignia was applied to the port fuselage side only, behind the cockpit, the aircraft were thus reassigned to carry the Royal Family and as VIP transports.

Benin

The Benin government obtained two HS-748s equipped with the large freight door donated by Belgium to be operated by the *Force Aerienne Populaire du Benin*. They were serialled TY-21A and TY-22A.

Brazil

The Brazilian Air Force (*Força Aérea Brasileira - FAB*) initially ordered six Hawker Siddeley HS 748 Strs.2 (designated C-91) to

Centre left: A good starboard side view of Belgian Air Force 748, CS01 at Munich in August 1977.

Left: Later the three Belgian Air Force HS748s shed their camouflage and were repainted for a role with 21 Sqn for VIP and communications flights as seen here visiting RAF Lyneham on 11 May 1988.

Right: Former Belgian Air Force HS748 CS01 seen now with the *Forces Aériennes du Bénin* (Benin Air Force) as TY-21A in November 2004

Centre right: 2500 was the first Avro 748 (designation C-91) for the Brazilian Air Force seen in August 1962. The following month it was displayed at the Farnborough Air Show. *(BAe photo)*

be used for tactical transport, moving troops and cargo across Brazil operating faithfully as a workhorse transport, and contributing to logistical needs within the country. The first one, 2500, was demonstrated at the Farnborough Air Show in September 1962, after which deliveries followed between November 1962 and September 1963. They were operated by the *Grupo de Transporte Especial -GTE* and used primarily for transporting government officials and VIPs between Rio de Janeiro – Galeao and Brasilia. On 1 April 1969, they were transferred to 2 *Grupo de Transporte,* 1 *Esquadrao* (The Condor Squadron) and based at Galeao Air Base, where they replaced Douglas C-54s. They were also used for transporting mail both domestically and to nearby South American countries

Later a further six Srs.2A HS-748s were ordered, all fitted with large rear freight doors and delivered between January and December 1975. Designated C-91As (but not marked as such), these were delivered direct to 2 *Grupo de Transport*, 2 *Esquadrao* (the Privateer Squadron) also based at Galeao, where they replaced Douglas C-118s. The 748s carried out similar work to those of 1 *Esquadrao*, but were also tasked supporting the Army Parachute Brigade and for supplying Brazilian Air Force bases with material from their depots. From 1 April 1978, all 748 aircraft were operated by 1 *Esquadrao*.

On 1 October 2001, the first six aircraft were withdrawn from service and struck off charge after giving nearly forty years' reliable service. Only one of the second batch of 748s had been lost in 1982 at Pedro Afonso, Brazil. After take-off, the crew faced technical issues and returned to land, but the landing was too

Right: 2507 was one of the second batch of HS748s fitted with the Large Freight Door, ordered for the Brazilian Air Force seen on a pre-delivery flight in May 1975. Note that now, apart from the engines, all bare metal surfaces are painted in gloss Light Aircraft Grey. *(BAe photo)*

Below: 2508, the third of the second batch of six HS748s for the Brazilian Air Force seen at Woodford in May 1975. *(Paul Tomlin)*

Above: Brazilian Air Force HS748 (C-91), 2508, again in service showing subtle changes in livery including larger and bolder roof titles in March 1989.

Left: The Royal Brunei Malay Regiment's sole HS748, AMDB-110, seen on a pre-delivery flight in November 1970. *(BAe photo)*

fast, leading to an overrun, crossing a street, and hitting a house, fatally killing four people – the co-pilot, one woman, and two children on ground. 2502 (the third aircraft delivered) is now preserved with the Brazilian Air Force Museum at Afonsos.

Of the five remaining large cargo door-equipped aircraft, a major upgrade programme was started in September 2001. The last of the Srs.2A fleet was withdrawn from use on 30 September 2005 and donated to the Ecuadorean Air Force the following year.

The first order (C-91 2500-2505) had polished metal belly, wings and engines with a very dark blue window cheatline and black roof titles. Brazilian national insignia appeared above and below both wings. The second order (C-91 2506-2511) of Srs.2A aircraft with the large side freight door were delivered in 1975 in the same basic scheme, but had their belly, wings and tailplanes painted gloss light grey, while the window cheatline colour was changed to black. Gradually the whole fleet followed this subtle scheme change and in the late 1980s, the roof titles *FORCA AEREA BRASILIERA* were enlarged in a bolder lettering font.

Brunei

The Royal Brunei Malay Regiment ordered one Srs.2A/273, which was delivered in January 1971, serialled AMBD-110. It was flown by the Air Wing of the Regiment as a VIP transport on behalf of the Brunei Government. Occasionally it was used to carry passengers and freight and in the Search and Rescue role for which it was modified to drop dinghies down a chute in the rear fuselage. In late August 1981 it was sold to Royal Brunei Airlines.

The aircraft wore a' Sage Green' cheatline and tail fin colour scheme with Brunei military roundels in six positions on wings and rear fuselage.

Centre left: In service after delivery, Brunei's HS-748 is seen at Paya Lebar Airport, Singapore in November 1971.

Left: XT-MAL of the Upper Volta Air Force at Manchester on 21 May 1983. *(Paul Tomlin)*

Right and centre right: XT-MAL, the first of two 748s for the Upper Volta Air Force on a pre-delivery flight in June 1977. Clearly a plane spotters' delight with registration letters displayed above and below both wings! ***(BAe photo)***

Burkino Faso (Formerly Upper Volta)

Burkino Faso was known as Upper Volta until 4 August 1984. Under President Thomas Sankara declared an act of decolonisation and cultural reclamation, replacing a French colonial name (meaning 'Upper Volta River') with one from indigenous languages meaning 'Land of Upright/Incorruptible People', symbolising national pride, integrity, and unity. Sankara felt 'Upper Volta' meant nothing to his people, so he adopted 'Burkina' (Mossi for 'upright/honest') and 'Faso' (Dyula/Mandinka for 'fatherland/land of our fathers') to forge a new, authentic African identity.

Two HS748 Srs.2As were ordered, both fitted with the large freight doors. XT-MAL was delivered in September 1977 followed by XT-MAN in August 1981 for operation by the *Force Aerienne de Haute-Volta,* which became the *Force Aerienne de Burkino Faso*. By 2009, only one aircraft was reported to be still operational.

In Upper Volta colours, the two aircraft were finished in white and Light Aircraft Grey with a window-line cheatline comprising red/white/black stripes. Black/white/ red military roundels were applied in six positions on the wings and fuselage. The black registration letters were unusually applied below and above both wings as well as on the tail fin.

Following the name change to Burkino Faso, the cheatline was repainted red/dark green in the same colours as the new roundel, which again was applied in six positions, the registration letters remaining above and below both wings.

Cameroon

The Cameroon Government ordered two Srs.2A/310 HS748s fitted with large freight doors, these being delivered in September 1977 for operation by *L'Armee de L'Air du Cameroun*. The first one was registered

Right: XT-MAL again, now with the *Forces Armées du Burkina Faso*, after the country changed its name from Upper Volta to Burkino Faso, seen at Ouaga in February 2001.

Below: TJ-XAF, one of two very colourful 748 Srs.2As, for the *L'Armee de l'Air du Cameroun* (Cameroon Air Force) at Woodford on 19 July 1977. ***(Paul Tomlin)***

Right: FAC1101, the first of five HS748s for the Colombian Air Force/ *SATENA*, seen at Woodford in December 1971.

Centre right: In service, the roof titles were changed to *SATENA* – the Colombian Air Force's military airline as seen on FAC1104, at Bogota in February 1975. *(Colin Ballantine)*

TJ-AAN on delivery, later re-registered TJ-XAF. The second was TJ-XAH, changing to TJ-AAO, both probably painted in the most colourful livery of any military HS748! In February 1982, they were withdrawn from use and sold to Cameroon Airlines.

Colombia

In May 1969, a HS-748 Srs.2A was demonstrated to the *Fuerza Area Colombiana*, who subsequently ordered four, all of which were delivered in March 1972, replacing Douglas DC-3s. Later, a Srs.2B fitted with a large rear freight door was added and delivered in August 1981. All aircraft were operated by *Servicio de Aeronavegacion a Territorios Nacionales -SATENA*. This division of the air force operates essential services throughout Colombia with a varied fleet of aircraft. The 748s were employed on the more demanding routes over the Andes ranging from Bogota to numerous points including Apiay, Araunca, Bahia Solano, Baranquilla, Bucaramanga, Buenaventura, Cali, Corozal, Culcta and Villavicencio on the eastern plains or within the Amazon basin.

The aircraft were delivered with a dark blue window cheatline between a white top and Light Aircraft Grey lower body and wings. Colombian Air Force roundels were applied to the rear fuselage and port/top, starboard/bottom (USAF style) on the wings with the military serial applied in black above and below the opposite wings. The titles *FUERZA AEREA COLOMBIA* were applied to the fuselage above the windows with small *SATENA* titles on the nose. By 1975, the roof titles were replaced by *Satena* in lower case

Right: Two years later and another livery change to this smart scheme for the Colombian Air Force/ *SATENA* fleet as seen on FAC1102, at Bogota in December 1977

Below: Still in service in January 1995 and another livery change for *SATENA*'s FAC1102, at Bogota, now devoid of Colombian Air Force roundels. *(Richard Vandervord)*

Above: A beautiful air-to-air study of the Presidential Ecuadorean Air Force aircraft FAE001/HC-AUK over Quito on 15 June 1989. *(Peter Steinemann)*

Left: FAE682, the second HS748 for the Ecuadorean Air Force on a pre-delivery flight in September 1970. Note only one roundel above port wing (and below starboard wing) with 'FAE' letters on the opposite wings. *(BAe photo)*

letters. Two years later and the cheatline was repainted in a smart two-tone blue scheme, with matching stylised titles. Some two decades later, the *SATENA* livery changed again with a simplified light blue cheatline. This lasted until the last two operational aircraft were disposed of in August and September 1997.

Serials were FAC-1101-1104 and FAC-1108.

Ecuador

The *Fuerza Aerea Ecuadoriana (FAE)* ordered four Srs.2A aircraft, two of which were fitted with the large rear freight door,the first two being delivered in October 1970. A fifth aircraft was ordered as a convertible VIP transport version for Presidential use, which was delivered in November 1970. The remaining two were delivered in November 1975 and April 1976. The fleet was assigned to *Escuadron de Transporte* 1112 of the *Ala de Transporte* No.11 and operated by *Transportes Aereos Militares Ecuatorianos – TAME*, the military airline that operates scheduled and charter flights. One of the 748s, HC-AUE/FAE 683, was lost in a fatal accident near Loja, Ecuador on 20 January 1976. The aircraft lost altitude while flying over mountainous terrain at FL100 en-route to Guayaquil-Simon Bolivar Airport. It struck trees with the right wing. Control was lost and

Centre left: FAE684 for the Ecuadorean Air Force before delivery at Woodford in October 1970. Following delivery, it was re-serialled 'FAE001/HC-AUK' as the Presidential aircraft. *(Paul Tomlin)*

Left: The Ecuadorean presidential HS748 001 still in use when seen at Quito in March 2007, but in a different livery and reverting to its military serial FAE684/HC-AUK.

Above: FAE738 in camouflage, was the first Srs 2A with the Large Freight Door fitted for the Ecuadorean Air Force, seen on a pre-delivery flight out of Woodford in October 1975. *(BAe photo)*

Left: FAE739/HC-AEY was also equipped with a Large Freight Door and delivered in camouflage. When seen in March 1991, it had been repainted and operated by TAME, Ecuador's military airline *(Tom Singfield collection)*

the aircraft crashed into the side of a mountain killing thirty-four of the forty-two occupants on board.

In March 2006, a further five, including two fitted with the large freight doors, were donated by the Brazilian Air Force, which were mainly used for spares.

TAME used its 748s to operate to numerous destinations from Quito until the last aircraft was withdrawn from use on 7 August 2014, when it was replaced by an Airbus/CASA C295. By then, the HS748 had served the FAE for just under forty-four years.

Serials: FAE 682/HC-AUD, FAE 683/HC-AUE, FAE 684/FAE 001/HC-AUK, FAE 738/HC-BAZ, FAE 739/HC-BEY, FAE 740-744

India

The Indian Air Force

AVM Harjinder Singh was looking to find a suitable replacement for the Indian Air Force's DC-3s that could be licence-produced in India. The Dart Herald and Fokker F27 were rejected after reviewing demonstrations by both. Discussions were soon made with Avro and the first Indian-built 748 was ready only weeks after the second prototype had flown in the UK, making its maiden flight on 1 November 1961 with the late Gp Capt Kapil Bhargava in command. He was accompanied by test pilots Chandu Gole and Ripu Daman Sahni. The prototype (constructor's number 500, serial BH512) was named 'Subroto' after the first

Centre left: Immaculate HAL-built 748 H-1177 of the Indian Air Force on a VIP visit to Salalah, Oman on 29 January 1973. *(Dave Lawrence)*

Left: HAL-748, BH-1013 of the Indian Air Force getting airborne from Yelahanka Air Base in February 2007. Note roof titles in a bolder font (titles in Hindi on the port side). *(Stephen Wolf)*

Right: Now with wings and belly painted grey, this is a good view showing presentation of underwing markings on Indian Air Force HAL-748 H2177, coded 'A', getting airborne from Yelahanka Air Base in December 1996. *(Stephen Wolf)*

Below right: Superb air-to-air shot of HAL-748 - 2M LFD H-2184 in camouflage of two shades of green and grey operated by 11 'Rhinos' Squadron of the Indian Air Force in November 1990. The Large Freight Door was installed by HAL with kits supplied by British Aerospace. *(Peter Steinemann)*

chief of the Indian air staff by Prime Minister Jawaharlal Nehru. On 26 November there was a demonstration of the aircraft's capability by Bhargava, who took off having feathered the right-hand propeller at V1, amazing some of the watching air force pilots by its apparent short field performance take-off.

Nehru was keen to fly in the aircraft, but given that it had only just started flight-testing he was advised not to. *'There were other cabinet ministers and a few governors and bureaucrats accompanying the prime minister'*, Bhargava wrote. Nehru was disappointed but Bhargava told him, *'if we had trouble there would be no government of India left'*. In fact, there were problematic issues early on, pressurisation issues resulting in the prototype losing a door at 6,200ft during flight trials. The prime minister cheered up when Bhargava showed him the aircraft's interior. He recalled, *'This was a marked improvement on his current VIP aircraft, the Ilyushin Il-14 from the USSR.'*

Initially, four aircraft were assembled by the IAF Aircraft Manufacturing Depot at Chakeri, Kanpur from parts supplied by Avro, but licence-building was switched to Hindustan Aeronautics Ltd. Despite the high hopes, the story of the 748's licensed production in India was not an entirely happy one. In the twenty years from November 1965, eighty-nine had been planned, but just sixty-one were built for the Indian Air Force for use as light transports. The first Indian-manufactured example made its maiden flight in March 1963 but early aircraft were reported to fall short of the specification. An investigating committee even recommended cancelling the licence. This was rejected, but the government decided to end Series 1 production in favour of an improved Series 2 to satisfy air force requirements. The initial example completed its first flight in January 1964.

The HAL production rate remained slow and only four aircraft had flown by mid-1965. This made the air force decide to drop plans for licence-production of the Andover C.1 and sixteen examples of the de Havilland Canada Caribou were bought instead.

Following another high-powered inquiry and advice from the manufacturers to use the

Below: By July 2002, several of the last HAL-748s in Indian Air Force service had been painted in this overall grey scheme as seen on H-2374 at Yelahanka Air Base. It wore *INDIAN AIR FORCE* titles in Hindi on the port side and in English on the starboard side. *(Stephen Wolf)*

Right: H2175, the ill-fated HAL 748 Airborne Early Warning (AEW) prototype in December 1998 that crashed on 11 January 1999. It was one of two testbed aircraft used in the development of India's indigenous Airborne Surveillance Platform (ASP) programme. ***(Peter Steinemann)***

Centre right: Starboard view of the AEW HAL-748 prototype in December 1996. ***(Phil Camp)***

Dart Mk531 engine to improve single-engine performance, forty-five aircraft had been delivered by 1975. That year, ten 748 Series 2M freighters with a large freight door were ordered, with another ten in 1980. Hindustan Aeronautics also built twenty-five aircraft for use by civilian operators. Some went to Indian government outfits like the Border Security Force and National Remote Sensing Agency.

The type remains in Indian Air Force service, but numbers are dwindling towards retirement. There were serious suggestions that an upgrade programme could extend its service life, adding a digital 'glass' cockpit and more modern engines. Hindustan Aeronautics made this proposal on the grounds that the fifty-six examples on the air force's inventory are still low-houred. However, to date this has not been proceeded with and a replacement type looks more likely.

The HAL-built 748s gave reliable service, with just one notable fatality. On 24 March 1991, H1513 took off from Yelahanka AFB with three crew and twenty-five cadets on board on a training flight, but while climbing to a height of 165 feet, the aircraft stalled and crashed in an open field, bursting into flames. The aircraft was totally destroyed by fire and all twenty-eight occupants were killed. The probable cause was loss of control during initial climb following an engine failure for unknown reasons.

In 1985 design studies were initiated for an airborne surveillance platform, which was produced as a prototype based on a Series 2M, serialled H-2175. It was equipped with a large circular radome, enclosed in a dish, mounted on a pylon above the fuselage, which would

Right: H-2176, HAL-748 Indian Air Force radar testbed fitted with the nose of the HAL LCA Tejas fighter aircraft, seen at Bangalore IN February 2001. ***(Phil Camp)***

Below: 9N-RAC, the HS748 for the Nepal Royal Flight seen at Woodford prior to delivery in January 1975. This was previously Hawker Siddeley's Large Freight Door 748 demonstrator, G-AZJH. ***(Tom Singfield collection)***

Right: 9N-RAC was later re-serialled RAN-20 when it was transferred to the Royal Nepalese Army Air Wing, as seen at Kathmandu in November 1981. ***(Peter Steinemann)***

Below right: Twenty years later and RAN-20 of the Nepal Army Air Wing is depicted here during its last days of service in this overall green scheme at Kathmandu on 19 October 2006. ***(Richard Vandervord)***

ultimately house the in-built radar, on top. Dubbed the 748 ASP, it was powered by two Dart RDa7 Mk536-2 engines. On 11 January 1999, during a test flight, the radome broke away from its supporting pylons and removed part of the fin and rudder, causing loss of control. The HAL-748 plane crashed in a dense forest, 2.5km from the Arakkonam killing all eight occupants on board. Consequently the 748 was considered unsuitable in this role and the project was terminated.

Meanwhile, HAL-748, H-2176 was utilised to flight test a number of indigenous systems like the Multi Mode Radar (MMR) and Multi Sensor Warning System (MSWS) for stand-alone testing and evaluation. It was fitted with a nose section that was designed for the indigenous HAL Tejas light combat fighter aircraft, becoming a testbed for the Tejas radar system.

Nepal

Nepal ordered one Srs.2A HS748 fitted with a large fitted rear freight door, which was the first so fitted and previously the manufacturer's demonstrator, G-AZJH. In January 1975 it initially joined the Nepal Royal Flight as 9N-RAC wearing a smart livery with red cheatline. In April 1980, it was transferred to the Royal Nepal Army Air Wing as RAN-20 for full time use by the 11th Brigade, following which it was later repainted in an overall dark green camouflage colour. With effect from 17 April 2006, the organisation was renamed Nepal Army Air Wing and the aircraft was reserialled NA-020. By October 2009 it had been retired and preserved.

South Korea

The Republic of Korea Air Force ordered two HS748 Srs.2As with delivery in April and July 1984. Both aircraft are operated by 296 (Black Bat) Squadron in a VIP role from Seongnam Air Base near Seoul.

Delivered as G-BBGY, the first was given the military serial 1713 (its construction number) on arrival; likewise the second one was G-BABJ, being reserialled 1718 on arrival. Both have worn three different colour schemes in service.

Sri Lanka (Formerly Ceylon)

The Sri Lanka Air Force bought its first HS748 Srs.2 from Air Ceylon as 4R-ACR (formerly G-ATEJ and CF-MAL) in April 1975, being transferred to the Air Force on 1 September 1979, becoming CR-831. In service with No.2

Top left: Republic of Korea Air Force HS748 1718, in delivery scheme and serial G-BABJ, at Woodford in April 1974. ***(Paul Tomlin)***

Centre left: A second scheme for the pair of ROKAF HS748s included a light blue cheatline as seen here on 1713 landing at Daegu on 28 October 2009. ***(Martin Fenner)***

Left: The Final Republic of Korea Air Force scheme for 1713 is shown here at Seongnam AB, Seoul, in October 21.

Right: Purchased from Air Ceylon as 4R-ACR, this smart Sri Lanka Air Force HS748 CR831 was operated by Helitours for tourist flights in October 1980. ***(Tom Singfield collection)***

Centre right: Seen still wearing the basic camouflage colours of its predecessor, British Aeropsace's Multi-Role demonstrator, G-BDVH, is Sri Lanka HS748 LFD, CR833, of No.2 Heavy Transport Squadron in April 1992. ***(Peter Steinemann)***

(Transport) Squadron/Helitours, it was repainted in a smart white and grey scheme with a red window cheatline, By July 1988 was seen repainted in an overall matt dark green camouflage colour. By March 1994 it had been withdrawn from use and stored, prior to be installed at the Sri Lanka Air Force Museum at Ratmalana.

This was followed by a Srs.2A obtained from Austin Airways Ltd of Canada in May 1975, which became serialled CR-830 and by April 1996 was painted in an overall matt dark grey colour. It last flew on 15 October 1998 and was repainted in a blue and white scheme being re-located to the Catalina Grill at Koggala Lake.

A Srs.2A fitted with a large rear freight door was obtained in March 1986, which was the manufacturer's demonstrator, G-BDVH. It initially wore the manufacturer's camouflage paint of dark earth and dark green camouflage with the addition of Sri Lanka Air Force markings with serial CR-832, which was changed to CR-833 when it was later repainted in similar camouflage colours of dark brown and green In December 1991. It last flew on 23 August 2002 and was repainted with Helitours titles to form part of the Eagles café complex.

In December 1991, two further HS748s joined the fleet, the first of which was British Aerospace's former 2B Series prototype demonstrator, G-BGJV. It initially became

Right: A sombre overall grey scheme is seen on Sri Lanka Air Force HS748 CR830 of No.2 Heavy Transport Squadron in April 1996. ***(Peter Steinemann)***

Below: CR831 seen in this dark green colour at Ratmalana Air Base on 14 July 1988 demonstrates another scheme worn by the 748s of the Sri Lanka Air Force.

Right: Seen in a somewhat lighter faded grey scheme is Sri Lanka Air Force 748 CR830 at Ratmalana AB, in April 2002. ***(Peter Steinemann)***

Below right: By the time this photograph of CR833 was taken at Ratmalana Air Base in April 2002, it had received a camouflage repaint from its previous BAe demonstrator scheme. ***(Peter Steinemann)***

4R-HVA for operation by Helitours on behalf of Air Lanka. It was later transferred to the Sri Lanka Air Force as 'CR-834'. However, on 29 April 1995, on approach to Jaffna-Palaly Air Force Base on a flight from Ratmalana and Anduradhapura in Sri Lanka, it was struck by a Surface-to-Air missile. This was launched by the LTTE Liberation Tigers of Tamil Eelam) killing three crew and forty-nine passengers .The second of the two was initially registered 4R-HVB to also be operated by Helitours in Sri Lanka. It was delivered still in basic Scottish European Airways colours and was later registered 'CR-835' to the Sri Lanka Air Force. It too was shot down by a SAM missile on 28 April 1995 on take-off from Jaffna-Palaly Air Force Base killing three crew and forty-two passengers. The two aircraft being shot-down in succession marked a significant turning point in the Sri Lankan Civil War by introducing MANPADs and suspending air travel to the North temporarily.

All the SLAF HS748s were all initially based at Katunayake, the Squadron moving to Ratmalana in April 1985. They were used for general military transport and for tourist flights.

Tanzania

The Tanzanian Government ordered one HS748 Series 2A for VIP use with delivery in April 1974. First flown as 5H-MPG, it was re-registered as 5H-STZ later that month and delivered on 29 April 1974. By 4 July 1994 it was withdrawn from use and sold to Tannol Holdings Ltd in September 1996, being re-registered 5H-RJN, although this was not worn. By October 1997 it was reported semi-derelict at Dar-es-Salaam still wearing the registration 5H-STZ and completely derelict in October 2013.

The Tanzanian Peoples' Defence Force (also known as *Jeshi la Wananchi la Tanzani – JWTZ*) ordered three HS748 Srs.2As, all fitted with large rear freight doors. Delivery took place in November 1977 and January 1978 wearing a gloss finish green and brown camouflage scheme with no military markings and only UK civil delivery registration letters. After delivery, they were repainted in matt green and brown camouflage scheme with Tanzanian military markings.

The first aircraft flew as G-BETZ in November 1977, becoming 'JW9008'. On 26 May 1987 it suffered a nosewheel collapse at

Top left: 5H-STZ, the Tanzanian Government's sole VIP HS748, was seldom flown, seen shortly after delivery in 1974 at an unknown location. ***(Tom Singfield collection)***

Centre left: Seen in a gloss green/brown camouflage and with delivery registration G-BETY at Woodford on 26 October 1977, is the second of three 748-2A LFDs for the Tanzanian Air Force, becoming JW9008. It was subsequently written off on 7 January 1985. ***(Paul Tomlin)***

Left: Repainted in matt green/brown camouflage and in full Tanzanian Air Force markings is JW9010 at Dar-es-Salaam in December 1993.

Right: Wearing its delivery registration, HS-TAF is the first HS748 for the Royal Thai Air Force King's Flight, which would be serialled 11-111. It is seen on a pre delivery flight in January 1965. *(BAe photo)*

Centre right: Here is the second HS748 for the Royal Thai Air Force King's Flight at Woodford in January 1973, which was also given the delivery registration HS-TAF, becoming 99-999. Note, unlike the first one, this 748 had all the bare metal painted light grey, apart from the engines. *(Paul Tomlin)*

Lake Manyara Airport with no fatalities but was never repaired, being written off and sold for spares and recovery to an Australian company.

The second aircraft also flew in November 1977 as G-BETY and was delivered in January 1978, becoming JW9009. On 1 July 1985, it too crashed and was written-off, soon after take-off from Mbeya, Tanzania. It was attempting to return following engine failure and crashed 4km short of the airfield, killing all four on board.

The third aircraft first flew from Woodford as G-BETX on 12 December 1977, becoming JW9010. This aircraft was also written-off when it belly-landed at Dar-es-Salaam, Tanzania on 7th February 1991 and was withdrawn from use.

Thailand

In 1964 the RTAF ordered one HS 748 Srs.2 for the Royal Flight, which was delivered as HS-TAF in January 1965 becoming 11-111 replacing a venerable VC-47A Dakota. It was delivered initially to the King's Flight painted with a very dark blue cheatline and fluorescent Day-Glo tail fin and wingtips and with polished metal wings, engines and belly, which were later painted Light Aircraft Grey. Roof titles *ROYAL THAI AIR FORCE* were worn on the port side in English letters, while on the starboard side it was written in

Right: In 2012, Royal Thai Air Force 748, 60306, was given special tail markings commemorating '100 Years of the Foundation Fathers of RTAF Aviation' as seen here at Don Muang, Bangkok on 5 November 2013. *(Keith Burton)*

Below left and right: Another anniversary was marked on 748 60303 commemorating fifty years of the HS748 in service with the Royal Thai Air Force 1964-2014. It is seen here departing Don Muang Air Base, Bangkok in January 2016.

Thai language. In 1981, it was noted the Day-Glo areas had faded and were repainted in a flat orange colour. A second aircraft was procured in January 1973, also delivered as HS-TAF, becoming 99-999.

A further four HS748s were transferred to the Royal Thai Air Force from Thai Airways, being delivered between September 1983 and January 1984, to be operated by 603 Squadron of the 6th Wing from Don Muang Air Force Base, Bangkok. Serials were 60303-60306, with two aircraft being re-fitted with the large rear freight door from kits supplied by British Aerospace plc. All were painted with the same cheatline as the first two aircraft but now with all natural metals areas painted Light Aircraft Grey, apart from the engines that remained polished metal. Also the English and Thai roof titles were transposed, now in English on the starboard side.

This page: 60301 is now preserved in the Royal Thai Air Force museum in Bangkok as photographed by the author there on 24 March 2018. The nose badge is the winged star of 6 Wing. The Thai inscription round the top reads 'Valour without arms' and at the bottom it reads 'Wing 6'. This aircraft was the very first HS748 delivered to the RTAF and was previously serialled 11-111.

In 2012, '60306' was given special 100th Anniversary tail markings with *Centennial of the Founding Fathers of RTAF Aviation* titles on the starboard side in English and on the port side in Thai language. It was marking 100 years of its Air Force (RTAF) by honouring the pioneering officers who established military aviation in the kingdom, an event commemorated with air shows in Chiang Mai and Bangkok, and events highlighting both historical and modern Thai aircraft, celebrating the nation's aviation heritage.

In 2014, 60303 was decorated with a horse on the tail fin to mark '50th Anniversary years of the HS748 in Royal Thai Air Force service'. This particular HS748 first flew on 12 November 1964 and was delivered to Thai Airways on 19 November 1964 as HS-THC, then delivered to the Royal Thai Air Force in August 1983.

The two former King's Flight 748s were also transferred to 603 Squadron as 60301 and 60302 respectively until the latter had a nosewheel collapse while landing at Don Muang Air Base on 22 November 2004. Repair was abandoned and it was struck off charge on 10 April 2006. It was refurbished and moved

Right: Smiths Aviation Division's single Avro 748, G-ASJT, seen in flight in October 1963, which would become XW750 with the Royal Aircraft Establishment.

Centre right: Still wearing the basic livery of Smiths Aviation Division, this 748 was giving the military serial XW750 with the Royal Aircraft Establishment, as seen here visiting Biggin Hill on 19 September 1970. *(Brian Stainer)*

to HRH Crown Prince Maha Vajiralongkorn's private collection at the Taweewattana Palace, Bangkok on 24 April 2009 and repainted in the King's Flight colours.

The type was formally withdrawn from service at a special ceremony at Don Muang Air Base on 30 March 2016 after over fifty-one years' service and 60301 was allocated to the Royal Thai Air Force Museum at Don Muang, Bangkok.

United Kingdom

On 28 October 1963, Avro 748, G-ASJT, was delivered to Smiths Aviation Division at Staverton, replacing a Vickers Varsity for autoland development trials. In 1970, it was transferred to the Royal Aircraft Establishment at Bedford as XW750.

In the early 1970s, to alleviate noise problems around airports, XW750 was used to investigate steep six-degree approaches, two-stage flare manoeuvres to reduce passenger discomfort and provide more precise landing. The steep approaches required the development of experimental visual aids to provide pilot guidance close to the ground and by 1974, XW750 had joined the Blind Landing Experimental Unit at Bedford. This included the first trials of what became the highly successful Precision Approach Path Indicator (PAPI) now a standard feature at most airports in the world.

Following the accident involving Dan Air HS748 (G-KEBF), which crashed during take-off from Sumburgh, Orkney Islands, in

Right: Here is HS748 XW750 at Bedford in September 1974 with the Royal Aircraft Establishment's Blind Landing Experimental Unit.

Below: Looking splendid in the 'raspberry ripple' scheme, HS748 XW750 from the RAE at Bedford is seen at Alconbury on 18 August 1988.

Right: A good underside reference view of the RAE's 748 XW750 overshooting Boscombe Down's runway approach on 18 September 1987.

Below right: Ten years later and here is HS748, XW750, now with *Defence Research Agency* titles on 10 March 1997, after it had moved to Boscombe Down from Bedford.

July 1979 with the loss of seventeen lives, XW750 was tasked In support of the accident investigation and performed flight tests to establish the cause of the accident. The investigation centred on the elevator gust lock mechanism, which had become engaged during pre-flight checks and which had contributed to loss of control.

On 30 September 1982 a Mil Std 1553B digital data transmission system was flown for the first time in the world in XW750. The equipment was designed and manufactured by Smiths Industries. This equipment replaced heavy and bulky cable looms and this data-bus standard was widely used until it was surpassed by higher transmission data rates.

XW750 was a highly effective flying laboratory for all its programmes, continuing the legacy of its first owner at Smiths Industries. With the addition of military markings and titles, XW750 retained its Smiths civilian scheme with medium blue cheatline and on completion of its trials with the BLEU, was transferred to the Flight Systems division of the RAE at Bedford. In 1987, it was repainted in the red/white/blue 'raspberry ripple' livery until it was retired in 2005, initially reverting to its civilian registration G-ASJT on sale to Clewer Aviation in 2008 and briefly by Directions Finningley as N748D, before being flown to Southend and scrapped in 2009.

Upper Volta (see Burkino Faso)

Venezuela

The *Fuerza Aerea Venezolana* ordered one Srs.2 HS748 for the use of the *Ministerio de la Defensa* as a VIP aircraft. It first flew on 1st July 1966 as 0111 and was delivered in August 1966. The fuselage was painted overall gloss white including the window cheatline which was outlined in black pin-stripes. Venezuelan Air Force insignia appeared on the rear fuselage and above port wing/below starboard wing only with *'FAV'* lettering in black on the opposite wings. Either side of the nose, it wore the Venezuelan coat of arms. By June 1987, it was reported withdrawn from use painted as YV-39C and used as an instructional aircraft.

In October 1977, a second aircraft was leased from *Linea Aeropostal Venezolana (LAV),* as 6201 but was returned to *LAV* in May 1980 as YV-05C.

Zambia

The Zambian Air Force ordered one HS748 Srs.2, which was delivered in June 1967

Above left: The Venezuelan Air Force 748 01-111, for use by the *Ministerio de la Defensa* at Woodford prior to delivery on 26 July 1966. *(Tom Singfield collection)*

Left: A very rare colour photo of at Woodford on 8 May 1967 of AF601, the first 748 for the Zambian Air Force as a Presidential/VIP, which fatally crashed and was written-off two months later after delivery! *(Paul Tomlin via Martin Fenner collection)*

Right: AF602 was purchased to replace AF601 with the Zambian Air Force and is seen at Lanseria, South Africa on 3 April 1993.

Below right: Following overhaul at Rand, South Africa, Zambian Air Force AF602 emerged in this very smart livery in September 2006.

serialled AF601 as a Presidential/VIP aircraft, wearing a thin dark green cheatline below the windows and dark green *ZAMBIA AIR FORCE* titles .The Zambian coat of arms was worn on the nose and rear fuselage. It crashed and was written off taking off from Lusaka, Zambia on 26 August 1969, killing three on board with one survivor. A second aircraft replaced it in February 1971 serialled AF-602. In 2001, it underwent a structural survey and thorough maintenance at Rand in South Africa and was returned to service with the Zambia Air Force in September 2002 resplendent in a smart new colour scheme. In November 2011, it was noted in yet another colour scheme and is thought to be current.

On 1 July 2025, the CAA withdrew the Type Certificate at request of the Type Certificate holder (BAe Systems (Operations) Ltd with no more of the type flying in the UK.

THE ANDOVER C. Mk.1

In the late 1950s, there was a requirement for a short-medium range transport aircraft for the RAF that could carry freight and passengers. It needed to have short take-off and landing ability and be able to fly from rough forward airstrips with maximum reliability, or drop a full payload of vehicles by parachute at low level or paratroops from heights up to and above 10,000ft.

Both Handley Page and Avro took up the challenge with designs. Both were already planning twin-engined transport aircraft in a bid to replace the huge numbers of Douglas DC-3 Dakotas in service around the world. Handley Page re-engined their Herald prototype that flew with four Alvis Leonides piston engines with two Rolls-Royce Dart turboprops making its first flight on 11 March 1958. Meanwhile Avro's prototype 748, G-APZV, first flew on 24 June 1960 powered by the same engines. If either could be adapted for easy freight loading, both had potential. Handley Page proposed to raise the tail of the Herald and open up the rear fuselage for easy loading. This option was favoured by the RAF, as the Herald had a high-wing configuration and loading could be easily achieved.

While this was being worked on, trials were held at the long-disused aerodrome at Martlesham Heath in late January 1962, in which the 748 - represented by second prototype G-ARAY — competed against the Handley Page Dart Herald for the RAF order. They were required to land on rough ground, essentially a ploughed field, and on its first practice run the 748 dug its wheels into the soft earth. Keeping the weight low and holding the nosewheel off the ground for as long as possible avoided the aircraft getting bogged down during the actual tests, which were carried out with steadily increased loads on board.

Meanwhile, the British Government decided to merge all the major British

Below: On 27 February 2012, Zambian Air Force AF602 was seen in yet another new livery at Rand Airport, Johannesburg. *(Ken Pierce)*

aircraft companies into two groups, the British Aircraft Corporation and the Hawker Siddeley Aviation Ltd Group. When Sir Frederick Handley Page refused to allow his company to be merged into Hawker Siddeley Aviation, unfortunately he lost the RAF contract for the military Herald. This left Avro, who had joined the HSA Group of companies by 1959 and had proposed a military transport version of their 748 airliner, called the Avro 748MF (military freighter). With the competition excluded, they wasted no time in creating a prototype by converting their 748 prototype, G-APZV, into the 'MF' variant.

It was larger, had more powerful engines and bigger propellers. It also featured an upswept tail to accommodate a rear loading ramp and a 'kneeling' undercarriage to facilitate loading and unloading.

Hawker Siddeley used the HS748 design as the basis for the Andover, designated HS780, a military transport aircraft developed and produced for the Royal Air Force. In terms of its design, the HS 780 was broadly similar to the 748, differing primarily by its redesigned rear fuselage and empennage, which incorporated a large rear loading ramp and a squatting main landing gear to better facilitate the loading of bulky freight items.

Above: The prototype Andover, G-ARRV, first flew as the AVRO 748MF (Military Freighter) on 21 December 1963 after being converted from G-APZV, the AVRO 748 prototype. ***(HSA photo)***

The 780 also used the more powerful RDa.10/1 3,245hp (2,419.80kW) estimated power at 15,000rpm, with Water/Methanol injection.

Effectively, the Andover was a new aircraft type, prompting one RAF pilot who flew the type in the 1980s to wonder why the Avro designers hadn't 'started with a clean sheet of paper'.

Re-registered G-ARRV, the Hawker Siddeley 748MF first flew on 21 December 1963, during a 2hr.5m. flight from Woodford piloted by J.G. Harrison. It was re-engined with the more powerful Rolls-Royce Dart 12 Mk.201C turboprops, developing up to 3,245ehp with water-methanol injection (compared with the 2,280ehp of the Dart 532 fitted to the civil series 2A aircraft). It also had larger diameter (14.5ft) fully feathering and reversing propellers to take advantage of the extra power, a wider centre section to move the outboard to give propeller clearance and an 11ft longer modified fuselage and tail assembly. Rather than having an awkward side-loading door, the rear fuselage was given an upwards sweep and beaver-style ramp and doors fitted. Furthermore, to allow vehicles to be driven on and off, the aircraft was fitted with a 'kneeling undercarriage' system, that allowed the rear fuselage to be lowered for easy access to the tail ramp. In effect, a controlled oleo collapse, which lowers the tail to bring the ramp in contact with the ground or the tailboard of a vehicle. It was also possible for each undercarriage leg to 'kneel', independently on uneven surfaces. After loading or unloading, the undercarriage is returned to its normal position by hydraulically re-pressurising the main legs.

The aircraft made its public debut at the Farnborough Air Show in September 1964 and by then, the RAF had ordered thirty-one of the type, naming it 'Andover'.

Above left: Now named 'Andover', the AVRO 748MF prototype, G-ARRV, made its public debut at the Farnborough Air Show in September 1964.

Left: G-ARRV appeared at the 1965 Paris Air Show and was then derelict at Woodford as seen here in February 1968, being used for spares for production Andovers. ***(Paul Tomlin via Martin Fenner)***

Right: The prototype Andover, G-ARRV, was then transported to the fire dump at RAF Benson, but before it could be burnt, in 1980 it was painted up to look like a Soviet military transport aircraft for an ITV film.

The Andover prototype, G-ARRV, was then demonstrated at the 1965 Paris Air Show at Le Bourget, after which it flew little and was grounded at Woodford and gradually stripped of parts for production aircraft. In 1979, it was transported by road to RAF Benson's fire dump for use by the station's fire department as a training airframe. However, before it could be burnt, Granada Television used it for a film called 'The Invasion', which was a drama documentary surrounding the events leading to the Soviet Union's invasion of Czechoslovakia in August 1968. The Andover was painted up as a Soviet Air Force transport aircraft for the film. Afterwards, it was released back to the fire department who subsequently destroyed it by fire during several exercises.

INTO PRODUCTION

The first production aircraft, XS594, first flew on 9 July 1965 and following acceptance trials with the A&AEE at Boscombe Down, the first deliveries commenced in 1966 to the Andover OCU and to No.46 Squadron of Transport Command at RAF Abingdon. Also, six

Right: When photographed again at RAF Benson on 15 September 1984, the Andover prototype had been gutted and soon after was burnt. *(Martin Fenner collection)*

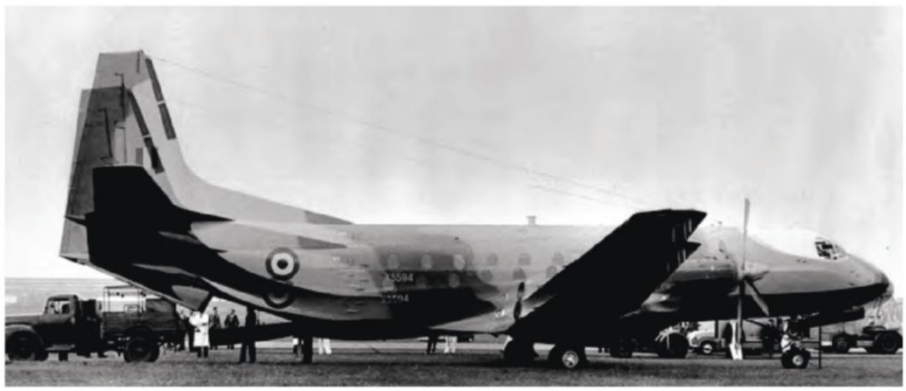
Below: The production line of HS748s and Andovers at Chadderton, from where they would be roaded to Woodford for final assembly and finishing. *(BAe photo)*

Right: XS594, the first production Andover C.1 during an early test flight in July 1965. *(HSA photo)*

Centre right: An interesting 'double exposure' photograph of the first production Andover C.1, showing how the hydraulic undercarriage 'kneels' to facilitate loading and loading. *(HSA photo)*

specially appointed HS748s were ordered for communications transports (XS791- XS794) and for the Queen's Flight (XS789 and XS790), which became designated Andover CC.Mk.2s.

A Press Day was held at RAF Abingdon on a bright cold winter's day at RAF Abingdon on 13 December 1966, by which time seven Andovers had been delivered, the first three for No.46 Squadron and the rest for the Andover Conversion Unit.



In service with No.46 Squadron, RAF

The Andover C Mk.1s were delivered in a two-tone disruptive camouflage pattern of high gloss Dark Earth and Medium Stone with gloss black undersides and a gloss white cockpit area. RAF D-type roundels were applied to the rear fuselage sides with just one roundel above the port wing, while just one B-type (red/blue) roundel was applied below the starboard wing. All lettering and serials were white with the underwing serials being finished in very pale grey. The aircraft of No.46 Squadron wore the tail insignia of three red arrows on a white disc, while below the cockpit they wore the dark green coat of arms shield of Abingdon town (this was gradually discontinued).

46 Squadron operated from RAF Abingdon, Berkshire, as a unit of 38 Group from the late autumn of 1966 until September 1970, when the squadron relocated to RAF Thorney Island, Hants, sharing its location with No.242 OCU, which was responsible for Andover crew training.

It played an important part in exercises in Germany and southern Europe. The first changes to the markings came on 1 August 1967, when 'Transport Command' was

Right: A good underside reference photo of XS594, the first production Andover C.1, showing the light grey serials and single B-type RAF roundel while undergoing single-engine approaches with A&AEE at Boscombe Down on 27 July 1967.

Below: Press Day at RAF Abingdon on 13 December 1966 with nine Andover C.1s present. *(Brian Stainer/APN)*

Right: Andover C.1 XS640 of 46 Squadron wearing the short-lived *Transport Command* titles at Upper Heyford on 13 May 1967.

Centre right: Change of markings on Andover C.1 XS601 of 46 Squadron, with white removed from the RAF national markings and *Air Support Command* deleted from the roof titles as it became part of 46 Group RAF Strike Command. Pictured at RAF Lyneham on 15 July 1972.

renamed 'Air Support Command', but this only lasted a short time as on 1 September 1972 it was absorbed into RAF Strike Command as part of No. 46 Group. The *Air Support Command* titles started being deleted during 1971 leaving just *ROYAL AIR FORCE* titles. In 1972, the white was removed from the RAF roundels and fin flash and at the same time the Andovers were repainted in the same camouflage colours but in a 'matt' finish replacing the high gloss delivery colours.

The primary role of 46 Squadron was, as one might expect, support for the Army in the battlefield. This was achieved in three ways- air landing at forward airstrips, air re-supply and air dropping paratroops. The Andovers were ideal, with the ability to get in and out of small airfields that larger RAF transports could not. A fleet of five Andovers could land on a natural airstrip as short as 430yd, deploying 650-700 troops (or nearly 100 tons of freight) if required. Full advantage could be taken of the aircraft's STOL characteristics and rough landing capability in certain situations.

For air re-supply, the Andover was able to drop four one-ton containers in a single drop over the target. Alternatively, numerous harness packs, each weighing about 185lb, could be dropped from the side door or in clusters over the sill. In conventional freighter role, the Andover could carry a maximum of 13,800lb over 700 nautical miles, which might be a Ferret scout car or a Land Rover with a trailer or Howitzer field gun. The Andover's third role was dropping paratroops,

Right: Andover C.1 XS641 of 46 Squadron seen at RAF Lyneham on 28 June 1973 after a complete repaint in the same camouflage colours but in 'matt' finish and not 'gloss' .

Below: Now with the Abingdon town shield badge removed from the nose, the third production Andover, C.1 XS596 of 46 Squadron, bask in the sun at RAF Abingdon on 15 September 1972.

Right and below right: Andover C.1 XS596, en-route from RAF Odiham to Milltown, RAF Lossiemouth's satellite airfield during 'Exercise Snowy Owl' on 24 March 1972.

carrying twenty-six parachutists and two despatchers. As a troop transport, thirty-two fully-equipped soldiers could be carried or up to forty-four passengers with little or no baggage. In all cases, a crew of four was carried, captain, co-pilot, navigator and air loadmaster.

46 Squadron's secondary roles were many and varied, including aeromedical evacuation tasks mainly to Northern Ireland and Germany. In this role, eighteen stretchers, four sitting patients and a medical team of three could be carried. No.46 Squadron also provided a detachment of two aircraft and crews at Masirah in the Gulf for communications duties in the Eastern Gulf area and also as a standby for search and rescue in the area. For long ferry flights, an internal fuel tank could be fitted to boost the range to 1,800 miles.

In 1972, the RAF's transport aircraft's colours started being 'toned down'. This included the Andovers that had already lost their *Air Support Command* titles and were now being repainted in the same camouflage colours but in a 'matt' finish and the RAF insignia roundels had the white removed, becoming 'B-type' red/blue insignia.

Finally, in March 1975 RAF Thorney Island closed and the squadron disbanded on 31 August.

Flying in an Andover

On 24 March 1972, I was invited to fly in XS596, the third production Andover C.1, of 46 Sqn on a press flight from RAF Odiham to Milltown in Scotland, RAF Kinloss's satellite relief landing airfield in Scotland. Here, an exercise called 'Snowy Owl' was being

Below:The Author with the Press Party during the exercise briefing with 46 Sqn. Andover C.1 XS596 at Milltown on 24 March 1972. *(Dick Ward)*

Right: Andover C.1 XS608 of No.52 Squadron RAF Far East Air Force over the Singapore waterfront in 1968. ***(MoD photo)***

Below right: The orange propellers spinners and the Scorpion tail badge identifies this as an Andover C.1 of No.84 Squadron RAF. XS645/E is depicted at Sharjah on 10 May 1969. ***(Dave Lawrence)***

conducted with Harriers of 1 Squadron.

The flight took 2¼ hours and the low whine of the two Rolls-Royce Dart engines made a smooth, comfortable flight with conversation easy. On arrival overhead Milltown, we turned downwind, base leg and on to finals to the short runway. The Andover has modified Fowler flaps with stops at 10, 22½, 27, and 30 degrees. At full flap, the rear edge of the flap goes beyond the vertical to provide very useful drag for short-field landings. At the maximum all-up landing weight of just under 48,000lb, the undercarriage can take a vertical velocity of 14.5ft per sec, which is indeed useful when literally dropping in to unprepared strips. On the downwind leg at 1,000ft, the undercarriage was lowered and flaps selected. On the final approach, the full 30 degrees of flap was selected and trimmed for 90kt on a six degree path. With just a few feet off the ground, the pilot selected reverse pitch, which effectively destroyed all the lift and put the Andover solidly on the ground at low forward speed. With the increased bite of the reversed propellers and the application of wheel brakes, the aircraft drew to a halt in what amounted to just half of the available landing area.

Following our visit to Milltown to see the exercise, it was time for our Andover to depart back to RAF Odiham. For take-off, 22½ degrees of flap was selected as the aircraft was held on its brakes and run up to full power. With the captain satisfied that the engine power, pressures and temperatures were satisfactory, the brakes were released and the Andover surged forward. As with other RAF transport aircraft, the passenger seats were facing rearward, so having our seat belts secured was essential! The co-pilot called out *'V1'* and *'V2'* as the aircraft got airborne in a shallow climb, allowing air speed to build up en-route back to Odiham in another 2 ¼ hours, while savouring the lovely low whine of the two Rolls Royce Dart turboprops.

Below: XS642 of No.84 Squadron seen from another squadron Andover C.1 in close formation near Bahrain in late 1967.

Right: No.242 OCU Andover C.1, XS600, wearing Air Support Command titles is seen near RAF Thorney Island in November 1970. ***(Dave Howley)***

Deployed to the Far East with 52 Sqn

Formerly entering service with 46 and 52 Squadrons at Abingdon, Berks, on 1 December 1966, No.52 Squadron was almost immediately deployed to Seletar, Singapore, with the first aircraft arriving on 22 December. Replacing Vickers Valettas there, others followed as more crews reached operational status with the Andover Training Squadron, which was also located at Abingdon. The aircraft remained in the brown/black delivery camouflage colours with the addition of 52 Squadron's insignia on the tail and a maroon shield with yellow lion shield of Singapore beneath the cockpit. The Andovers re-deployed from Seletar to Changi in September 1968, returning home in September 1969 prior to the squadron disbanding on 31 December 1969 after the RAF's withdrawal from the Far East.

Deployed to the Middle East with 84 Sqn

The third operational RAF squadron to be re-equipped with Andover C.1s was 84 Squadron stationed at Khormaksar, Aden, replacing its Blackburn Beverleys. The first aircraft arrived in August 1967, prior to the squadron moving down the Gulf to Sharjah, where the main elements of the British Army were located. The squadron remained there supporting the Army until 1971 following the RAF's withdrawal from the Gulf. 84 Squadron's eight Andovers wore the same camouflage colours with no roof titles, but with orange propeller spinners and the squadron's Scorpion badge in black on a white disc on the tail. Serials and codes used were XS595/A, XS611, XS641/B, XS642/C, XS643/D, XS645/E, XS646/F and XS647.

242 OCU

The 242 Operational Conversion Unit (OCU) operated at RAF Thorney Island, flying the Armstrong Whitworth Argosy, Handley Page Hastings, and Lockheed C-130 Hercules to train pilots and aircrew in the 1970s, with the last units being 242 OCU and 46 Squadron flying the Andover C1 before the base closed in March 1976. The Andover specifically was part of the Andover Training Squadron within the 242 OCU, notable for its black cat on a yellow disc tail fin.

Tests and trials.

Initially XS594 and XS597 were retained by the Aeroplane & Armament Experimental Estabishment -A&AEE (as it was known until May 1992) - at Boscombe Down during 1966-67 for handling, loading and parachute extraction trials. However, three more Andover C.1s were later allocated to the

Top left: With a nose probe and white rear fuselage with black and white checks this is a very rare photo of Andover C.1 XS597, taken at Boscombe Down on 31 August 1966, during parachute and load extraction trials with A&AEE.

Centre left: Andover C.1 XS606 was first sent to the RAE at Farnborough for load extraction trials as seen there in July 1973.

Left: XS606 is seen here three years later visiting East Midlands Airport in July 1976, after it was transferred to the Empire Test Pilots School at Boscombe Down and now fitted with a nose boom. ***(Steve Gensler)***

1. The following year, XS606 had been given a red tail by the time it appeared in the static park at Greenham Common in June 1977 for the International Air Tattoo.

2. Ten years later and XS606 is seen now repainted in the full 'raspberry ripple' scheme at Fairford in July 1987 for the International Air Tattoo.

3. Very rare photo of Andover C.1 XS607, at Woodford in August 1978, still in camouflage after it was transferred to the RAE at West Freugh for sonobuoy research. *(Martin Fenner collection)*

4. By January 1986, Andover C.1 XS607 had been repainted in the MoD(PE) 'raspberry ripple' scheme at East Midlands Airport as depicted there. *(Martin Siegrist)*

5. Andover C.1 XS646 joined the RAE at Farnborough in August 1975 as a large flying laboratory wearing the scheme shown. *(MoD(PE) photo)*

6. Repainted in full RAE 'raspberry ripple scheme, XS646, made its public debut at Greenham Common for the International Air Tattoo in June 1981. *(Stephen Wolf)*

7 & 8. In June 1992, when XS646 arrived for Air Tournament '92 at Boscombe Down, it had been modified to a C.1(PR) with snout-like stub nose and was known as 'Miss Piggy'. Infra-red cameras were mounted in the nose for trials with electro-optic sensors. The aircraft was also fitted with a ventral pylon that carried a Vinten camera pod.

Right: The Defence Research Agency (DRA) was formed in the UK on April 1, 1991, by merging four key Ministry of Defence research establishments (RAE, RARDE, RSRE, ARE) into one executive agency, later evolving into the Defence Evaluation and Research Agency (DERA) in 1995, and eventually leading to QinetiQ and Dstl in the 2000s. Andover C1(PR) XS646 is seen here wearing its new DRA titles at Cambridge in December 2000 after modifications carried out by Marshalls.

Below right: Here is XS646 again, operated by QinetiQ from Boscombe Down on 6 March 2007, further modified carrying a ventral pod fitted with a FLIR installation. Forward-Looking Infrared systems on aircraft use thermal imaging to detect heat, creating images that help pilots see at night, in fog, or through smoke, crucial for military targeting, search and rescue, surveillance (ISR), and even aerodynamic research by visualizing heat patterns on wings. These systems sense infrared radiation (heat) from warm objects against cooler backgrounds, offering all-weather, 24/7 operation, and can integrate with TV cameras, rangefinders, and digital maps for enhanced situational awareness, providing 'eyes in the sky' for various missions. *(via Richard Andrews)*

Establishments and others were briefly loaned to the Establishments for Controller (Air) release trials. During 1973, XS606 was operated by the Royal Aircraft Establishment (RAE) at Farnborough for further parachute load trails, before in 1976 being transferred to the Empire Test Pilots School at Boscombe Down for multi-engine test pilot training. Meanwhile XS607, a former 84 Sqn aircraft, went to the Royal Aircraft Establishment at West Freugh in Scotland in 1978 and XS646 went to the RAE at Bedford for various radar, photographic and avionics trials. The latter transferring to the Defence Research Agency/Qinetiq at Boscombe Down and fitted with various appendices for further trials. XS606 was the final Andover in military service, and was finally withdrawn from use on 31 August 2012.

Below: By 2010, Andover C.1(PR), XS646 had been modified again with an extended radar nose cone when depicted operated from Boscombe Down by QinetiQ in March that year.

Open Skies

The Treaty on Open Skies was a military arms control agreement between NATO countries and Russia and the Eastern European countries that permitted mutual, unarmed surveillance flights over the entire territories of its member nations to gather information about military forces and activities. Signed on March 24, 1992, in Helsinki, Finland, its purpose was to build confidence and transparency among member states, thereby reducing the risk of conflict.

The Treaty allowed military observation aircraft from one member state to fly over the territory of another. These flights were specifically for monitoring military installations and activities using certified cameras, infrared scanners, and synthetic aperture radar. To ensure compliance, representatives of both the observing and the observed state were on board the aircraft during flights. The data collected was available to any state party upon request for the cost of reproduction, ensuring wide access to the information. Flights required at least seventy-two hours' notice and a mission plan

In January 1987, the third production Andover C.1, XS596 was ferried to Woodford for conversion to C.1 (PR). Wearing a transport white and grey scheme,

Above and right: Operating from A&AEE at Boscombe Down, Andover C.1(PR) XS596 was allocated to the 'Open Skies Treaty', which was a post-Cold War agreement signed in 1992. It allowed member nations to conduct unarmed surveillance flights over each other's territories to verify arms control, fostering confidence through aerial observation. Unfortunately this came to an end on 22 May 2010, when the USA withdrew from the agreement. XS596 was then transferred to No.60 Squadron in Germany.

it was delivered to No.60 Sqn at RAF Wildenrath in Germany, fitted with cameras and surveillance equipment for a clandestine role patrolling the Berlin corridor, replacing a similarly-fitted Percival Pembroke, so this aircraft was perfectly suited for the 'Open Skies' role. When the Berlin Wall came down in 1989, followed by the collapse of the Soviet Union, XS596's role with 60 Squadron became redundant, so in June 1992, it was transferred to A&AEE Boscombe Down for its new role, which lasted until 2007. It made its last Open Skies flight, Riga-Aalborg-Boscombe Down on 16th October 2007 and was withdrawn from use. It was stripped of parts to keep QinetiQ's other Andovers flying and was scrapped.

The Open Skies Treaty has been significantly weakened in recent years, following the withdrawal by the United States on 22 November 2020, citing alleged Russian violations. Russia followed suit, announcing its intention to leave and formally withdrawing in December 2021, citing the US departure and concerns that information gathered by remaining allies might be shared with the US.

While the treaty remains technically in force for the remaining thirty-two member states, primarily in Europe, its effectiveness has been greatly diminished without the participation of the US and Russia. Some remaining state parties have continued to conduct observation flights to maintain operational preparedness and preserve knowledge of procedures.

Left: Good air-to-air view of 115 Squadron Andover XS605 in 1979 after conversion from a C.Mk.1 to an E. Mk.3. *(MoD photo)*

Calibration and ATC Checkers

Four of the remaining Andover C.1s were converted to E.3 standard and fitted out and equipped for radar and radio and navigation calibration duties with an inertial referenced flight inspection system (IRFIS) for radio and airport nav aid calibration at UK military airfields, replacing the aged Vickers Varsities of No.115 Sqn and supplementing the Squadron's Argosy E.1s, which it also replaced in due course . A large light was fitted beneath the nose chin, for easy sighting reference when lining up with a runway. Painted in a highly visible red, white and grey scheme, the first conversion, XS640, was delivered to RAF Brize Norton in November 1978. A further three Andovers were given the designation E.3A without the calibration equipment fitted, while one remained unconverted for crew training.

Above: On 4 January 1983, No.115 Squadron moved from RAF Brize Norton to RAF Benson and Andover E.3 XS605 heads a line-up of the squadron's aircraft there on 26 July 1986.

Left: In 1993 115 Squadron RAF commemorated their 75th Anniversary by painting up Andover E.3 XS605 with these special tail markings as seen at Brize Norton on 5 June that year.

In 1982, No.115 Squadron moved from RAF Brize Norton to RAF Benson, Oxfordshire with its full complement of Andover E.3/3As until it disbanded on 19 October 1993. After No.115 Squadron disbanded, the important task of flight and radar calibration at RAF airfields was taken over by specialised civilian contractors Hunting Aviation Ltd using Andovers, XS603,'605,'610 and '640 . One aircraft was withdrawn in 1995, followed by the remaining aircraft after the contract was terminated on 19th October 1996. Today, calibration of UK military (RAF) Navaids and ATC systems is primarily handled by specialist private companies such as, notably Flight Calibration Services (FCSL) and Flight Precision Ltd., who are approved by the UK Civil Aviation Authority (CAA) and work on both civil and military sectors, ensuring regulatory compliance for critical air navigation & surveillance equipment at RAF airfields.

Other Roles

In July 1975, Andover C.1, XS644, appeared at RAF Thorney Island with 46 Squadron markings wearing a European camouflage of matt dark green and dark grey with light grey undersides (the same colours that RAF Hercules were subsequently painted in) and it looked as though the whole fleet would be thus repainted. However, with 46 Squadron about to disband the following month, clearly this was not going to happen. The Ministry of

Centre left: In July 1975 XS644 of 46 Squadron based at RAF Thorney Island became the only Andover C.1 to be painted in this European green/grey camouflage scheme. No others followed as the squadron disbanded the following month. ***(Dave Howley)***

Left: By November 1978, XS644, had been modified with a ventral radar pod and had been transferred to the EWAU (Electronic Warfare & Avionics Unit) within No.51 Squadron at RAF Wyton. It is seen here wearing No.51 Squadron's Red Goose badge and with the radar surveillance pod attached, while visiting Rome. ***(Marti Fenner collection)***

Right: Now converted to an Andover E.3 and wearing 115 Squadron's colours, XS644 is seen here at its home base on 16 July 1983. As it was still being operated by EWAU, it is probably wearing 115 Squadron's colours as a 'disguise'. *(W.F.Wilson)*

Below right: Following the fall of the Berlin Wall in 1989 and the collapse of the Soviet Union, Andover C.1 XS644 finally gave up its 'clandestine operations', and was repainted in this grey scheme, being now allocated to No.32 Squadron at RAF Northolt as seen at RAF Brize Norton on 5 June 1993.

Defence had other plans for XS644 as the Cold War was still at its height. In October 1975, it was sent to 5MU at Kemble, then to RAF Wyton, Cambridgeshire, fitted out with sensors and other classified equipment, joining the Electronic Warfare and Avionics Unit (EWAU), part of No.51 Squadron. Once fitted out, in early 1977 it went to the A&AEE at Boscombe Down to test the equipment out and undergo flight trials of SRIM 3730. In April 1977, it was sent to Hawarden for Hawker Siddeley Aviation to carry out further tests and make modifications to an earlier fitted ventral radar pod. By May 1977, it was back at Wyton with EWAU ready for operations and noted the following year wearing No.51 Squadron's markings on the tail. Its actual tasks are unknown, but it was frequently deployed to Germany. During 1979-80, Andover E.3s XS603 and '639 of 115 Squadron were also loaned to EWAU to carry out some of the tasks allotted to XS644.

In 1981, XS644 had the radar pod removed and it was repainted in the red/white/grey scheme of 115 Squadron's Andovers and based at RAF Brize Norton, but still operated by the Electronic Warfare and Evaluation Unit, possibly as a disguise to 'blend in' with the other 115 Sqn Andovers. When No.115 Squadron moved from Brize Norton to Benson it joined them in February 1983 and was then converted to an E.3A the following April. It spent most of its time between Benson and Wyton still operated by the EWAU, then after a repaint at Luton, finally returning to join No.115 Squadron at RAF Benson May 87.

In early 1992, XS644, was repainted gloss grey overall with toned-down markings and light blue cheatline below the windows and joined No.32 Squadron at RAF Northolt undertaking transport duties. It was finally retired on 31 March 1993 and sold privately, ending up with ITAB Cargo in Zaire, where it was damaged beyond repair in a landing accident.

Andover C.1, XS637, was based at Fornebu, Oslo, Norway as the personal aircraft of the Commander Air Forces Northern Europe (C-in-C AFNORTH) from 1970 until December 1985.

Initially wearing the standard Andover brown camouflage in 1970, XS637's role could be identified by the '4-star' red plate near the rear passenger door. By 1981, it was seen having been repainted in a smart white and grey scheme with a broad blue lightning flash cheatline and a Viking ship on a blue shield on the tail.

In December 1985, it was transferred to No.32 Sqn. during which time it was even used as a mount for 'The Falcons' parachute team. After another repaint matching the RAF's Andover CC.2s it then went on to join No.60 Squadron at Wildenrath in Germany in

Above left: Andover C.1 XS637 was the personal aircraft of C-in-C Air Force North (4-star bar beside rear doorway) and is seen at RAF Northolt on 27 June 1970. *(Jeff Peck)*

Left: By March 1981 XS637, the aircraft of Commander Air Forces Northern Europe (C-in-C AF North), was repainted in this smart white and grey scheme with a broad blue lightning flash as seen visiting RAF Brize Norton.

Above: By 1986, XS637, was transferred to No.32 Squadron at RAF Northolt, still wearing the colours of C-in-C Air Force North. It was even used as the mount for the RAF Falcons parachute team at air shows, as seen here at Biggin Hill on 18 May 1986.

Left: Five years later and XS637 had another make-over in order to join No.60 Squadron at RAF Wildenrath in Germany and was marked up to commemorate the Squadron's 75th Anniversary as seen here at RAF Brize Norton on 7 September 1991.

March 1987, where it marked the squadron's 75th Anniversary with special tail markings in 1991. When No.60 Squadron disbanded on 31 March 1992 XS637 was initially stored at Shawbury before being sold at auction and ending up with ITAB Cargo in Zaire/Democratic Republic of the Congo. In 2003 it was reported derelict there.

The Andover CC.2s in RAF Service

Six HS748s designated CC.Mk.2 were ordered, XS789 and XS790 and XS791-XS794. The first two were specially fitted out for The Queen's Flight and would be based at RAF Benson, Oxon. The rest would be distributed to the Commands at home and overseas to replace mainly Vickers Valettas and, Pembrokes used by the Communications Flights. XS791 and XS792 went to RAF Khormaksar in Aden for the Middle East Air Force Communications flight, XS793 was also initially allocated to 21 Squadron, the MIddle East Communications Flight in 1965, but subsequently joined the RAF Far East Air Force Communications Flight at Changi, Singapore, the following year. XS794 was operated by the Metropolitan Communications Squadron of RAF Transport Command, stationed at RAF Northolt. The latter's roof titles were changed from *'Transport Command'* to '*Air Support Command'* on 1 August 1967 and subsequently joined No.32 Squadron during a unit reorganisation. When the RAF pulled out of Aden in November 1967, XS791 and XS92 also joined No.32 Squadron at Northolt. When the RAF Far East Air Force

Centre left: Andover CC.2 XS791 of the RAF Far East Comms Flight at Changi in April 1966.

Left: By late 1966, Andover CC.2 XS791 had been transferred to 21 Sqn - the RAF Middle East Comms Flight as seen here at Sharjah. *(Peter R. March)*

Right: After serving with the RAF Far East Comms Flight, Andover CC.2 XS792 went on to join No.32 Squadron at RAF Northolt as seen in this air-to-air view on 10 July 1990. ***(Robbie Shaw)***

Centre right: Andover CC.2 XS794 was initially allocated to the Metropolitan Comms. Sqn. at RAF Northolt. It is seen here with its original *Transport Command* titles while on loan to The Queen's Flight with Princess Alexandra on board visiting RAF Wroughton, Wiltshire in July 1967.

Bottom right: RAF Transport Command was renamed RAF Air Support Command on 1st August 1967. Here is Andover CC.2 XS794 wearing the new titles during a visit to Bromma, Sweden on 31 August 1969. ***(Lars Soldeus)***

disbanded on 31st October 1971 and the RAF withdrew from Singapore, Andover CC.2, XS793, was upgraded and joined the other two with The Queen's Flight at RAF Benson.

The Queen's Flight Andovers

Replacing the three de Havilland Herons of the Queens Flight, the two Andover CC.2s, XS789 and XS90, were delivered to RAF Benson in May and July 1964 respectively and gave faithful service, being used extensively worldwide on official duties for members of the United Kingdom Royal Family. Countries visited included such faraway places as Fiji, Tonga and Papua New Guinea in the Pacific, India and the Gulf States, Canada and the West Indies and several countries in North, West and East Africa. During the type's twenty-six years with the Flight, most countries throughout Europe were also visited.

As the Queens' Flight Andovers were gradually being replaced by BAe 146s, in August 1986 XS793 was transferred to join 60 Squadron at Wildenrath in Germany and in October the same year, XS789 was then repainted in an overall grey finish with toned down national insignia to be operated by No.32 Squadron at RAF Northolt for a short period before being sold.

XS790 was finally retired from the Queen's Flight in 1991 went on to be extensively modified for tests and trials for the Defence Research Agency at Boscombe Down, adorned with various 'lumps and bumps' and repainted in the 'raspberry ripple' colour scheme. Today, just the forward fuselage survives with the Boscombe Down Aviation Museum at Old Sarum, Wilts.

Following the withdrawal of the RAF from Singapore prior to the country gaining independence, Andover CC.2, XS793, became surplus with the Far East Communication Squadron. It was thought that as the Queens Flight only had two Andovers, if one went unserviceable or was under maintenance, that would leave the sole remaining aircraft available for royal duties. Therefore it was decided to add XS793 to the Queen's Flight, and it arrived at RAF Benson after its refit in June 1969. It served until July 1987 when it was transferred to No.60 Sqn, the RAF Germany Communications Squadron at Wildenrath, being sold later.

Above left: XS789, the first Andover CC.2 for The Queen's Flight, seen in its delivery colours in May 1964. ***(HSA photo)***

Left: XS790, the second Andover CC.2 for the Queen's Flight seen here at RAF Abingdon on 10 June 1968 wearing the first modified livery change with red engines and tail scheme. ***(Iain MacPherson)***

1. 26 June 1969 and her majesty The Queen is seen arriving with other members of the royal family in Andover CC.2 XS790 at RAF Little Rissington. The occasion was the Royal Review of the Central Flying School. Commandant of the CFS was Air Commodore Sir Ivor Broom, seen in a wheel chair following a flying accident, greeting members of the royal family.

2. 1972-73 marked another change in the livery of The Queen's Flight Andovers. The polished metal belly and wings were painted white in 1972 and in 1973 the RAF fin flash on the tail was replaced by a Union Jack flag. Here, Her Majesty The Queen is seen arriving at RAF Lyneham in XS793 for the Royal Review on the Station on 15 June 1973.

3 & 4. These two air-to-air views taken in 1975 show Andover CC.2 XS790 in the revised Queen's Flight livery now with the nose cone painted white. *(MoD photos)*

5. HRH Prince Charles is seen piloting Andover CC.2 XS790 of The Queen's Flight, as he takes off from White Waltham on 14 May 1977, following The Queen's Silver Jubilee Air Show there.

6. Andover CC.2 XS790 again at RAF Benson on 26 July 1986 in the final livery change before being withdrawn from use, now with the fuselage roundels deleted.

7. After being withdrawn from use with The Queen's Flight, Andover CC.2 XS789 went on to serve with No.32 Squadron at RAF Northolt wearing this grey toned-down scheme. It is seen here at Le Bourget, Paris, in September 1993.

8. The second former Queen's Flight Andover CC.2 XS790 had a much more interesting 'second life' being modified for SAR (Synthetic Aperature Radar) trials with the Defence Research Agency at Boscombe Down as seen in September 1995. The new nose housed infra-red sensors and a steerable turret for SIRSA (Study into Infra-Red Sensor Algorithms). The cabin was modified with six operational observer positions. The aircraft was withdrawn from use in September 1998 and broken up, the nose surviving in the Boscombe Down Aviation Museum at Old Sarum.

Right: Former RAF Andover C.1 XS599 is seen as NZ7620 at Whenuapai, on 18 December 1977 after delivery to No. 1 Squadron of the Royal New Zealand Air Force. ***(Dick London)***

Below right: During 1982, the Royal New Zealand Air Force Andovers were repainted in this 'Vietnam-style' camouflage of two-tone green and tan brown as seen here on NZ7623 (Ex XS604) of RNZAF's 1 Sqn at Christchurch, New Zealand, on 12 November 1982. ***(John Mounce)***

Queens Flight livery variations

1964 : XS789 and XS90 were delivered with red wings and a fully painted red fin and rudder and highly polished metal belly and engines. RAF roundels in six position and fin flash on the tail.

1968: The polished metal engines were painted red to blend in with the red wings and the lower part of the red tail was repainted white, the division being aligned with the top of the fuselage.

1969: XS793 joined the Queens flight in the above scheme.

1972: When polishing the lower fuselage it was found the rivets were being worn away, leading to safety concerns. Therefore the lower fuselages of all three Andovers were painted gloss white during late 1972 – early 1973.

1973: Tail fin flash replaced with a Union Jack flag.

1975: Radar nose cones are traditionally painted matt black. Tests involving painting the nose cone on the Andovers in another colour did not affect the radar's performance, so their nose cones were painted gloss white, blending in with the fuselage colour.

1986: The final livery variation was removing the fuselage RAF roundels to be compatible with the BAE.146s.

In New Zealand Service

When the RAF pulled out of Aden in November 1967, the Andover C.1s of No.84 Squadron became surplus to requirements and were put into storage. In 1976, the Royal New Zealand Air Force (RNZAF) acquired 10 of them (NZ7620 -7629) to serve as tactical transports with training being provided at RAF Brize Norton.

Delivered between Feb-May 1977, four of them went to No.1 Squadron at Whenuapai where they replaced the older Bristol Freighters, which were used for domestic and international transport,

Top left: Six of the New Zealand aircraft were allocated to communications and VIP duties with 42 Squadron and were repainted in this attractive light-blue cheatline scheme as seen on NZ7628 over Woodbourne c1980. ***(RNZAF official via John Mounce)***

Centre left: RNZAF Andover C.1, NZ7627, was seconded for United Nations duties and painted in this overall white scheme, depicted at Auckland in November 1991. ***(John Mounce)***

Left: In 1993 NZ7627 had its RNZAF markings removed and had *UNITED NATIONS* titles displayed as one of three Andovers that were deployed to Somalia under the UN-sanctioned United Task Force (UNITAF) (Operation Hope) to support humanitarian aid delivery by flying personnel and supplies, operating from Mogadishu airport during a dangerous famine crisis. Alongside Army personnel securing aid routes, the RNZAF flew 233 missions, transporting thousands of people and tons of cargo, protecting aid efforts against warlords in a critical, dangerous operation that marked New Zealand's most significant post-Vietnam military deployment. ***(via John Mounce)***

Right: In 1988, the RNZAF Andovers of 1 Squadron were repainted yet again, in this toned-down camouflage scheme as seen on NZ7620 (Ex XS599), at Christchurch on 29 July 1988. Ten years later, in 1998, all the RNZAF Andovers were withdrawn from use. ***(John Mounce)***

Below right: Most of the former RNZAF Andovers were sold to African start-up cargo companies including NZ6729 (ex RAF XS645), which became 9Q-CVC with Air Katanga, seen here at Lanseria, South Africa in April 2001.

peacekeeping missions, and disaster relief work. The Andovers were used in the short/medium range tactical transport role of troop lift, casualty evacuation, paratrooping and paradropping of supplies. Initially the RNZAF Andovers retained the RAF's brown camouflage colours with just the RAF roundels being replaced by New Zealand 'Kiwi' roundels and *ROYAL NEW ZEALAND AIR FORCE* titles in white on the roof.

By 1981, the white cockpit roof patch had been overpainted as warranted unnecessary in the New Zealand climate. Then in 1982 a complete repaint was made in a 'Vietnam style' tactical camouflage of two-tone green and tan brown overall. The Squadron was deactivated on 7 December 1984.

Meanwhile the six Andovers were delivered to No.42 Squadron at Ohakea for use in the VIP and General Communications roles. These Andovers were repainted in a smart transport style scheme of white roof and Light Aircraft Grey wings with a light blue window-line cheatline outlined with dark blue pin-stripes.

On 10 December 1984, No.42 Squadron moved to Whenapai and took over the task performed by No.1 Squadron, whose aircraft it acquired.

From September 1988 until December 1990, NZ6267 was repainted overall gloss white and based in Tehran, Iran in support of the United Nations. Initially retaining full RNZAF markings, these were later removed and replaced by *UNITED NATIONS* titles. On 1 January 1993, three aircraft were despatched to Mogadishu in Somalia on similar relief work for the United Nations, returning to New Zealand in May 1993

1998 was the final year of service for the RNZAF Andovers, during which they were repainted again in a more subdued three-tone green camouflage with the white removed from the national insignia. The last flight was made on 20 June 1998, prior to being retired.

Specifications

Hawker Siddeley 748 Series 2B/Andover CC.2/HAL-748

Crew:	2 plus attendant
Engines:	2 x Rolls-Royce Dart turboprops (various marks, e.g., RDa.7 Dart Mk 536-2)
Power:	Around 2,280 shp (1,700kW) each
Propellers:	4-bladed, constant-speed, fully-feathering
Dimensions	
Length:	20.42m (67ft 0in)
Wingspan:	30.02m (98ft 6in) to 31.23m (102ft 6in) (variant dependent)
Height:	7.57m (24ft 10in)
Weights & Capacity	
Max Takeoff Weight :	Approx. 21,092kg (46,500lb)
Max Payload:	Up to 5,136kg (11,323lb) or 6,000kg (13,227lbs)
Passenger Capacity:	40-58
Performance	
Cruise Speed:	452km/h (280mph)
Max Range:	1,715km (1,065 miles) (can vary significantly with payload/variant)
Service Ceiling:	7,620m (25,000ft)

Hawker Siddeley Andover C.1

Crew:	2–3
Capacity:	52 troops, 40 paratroops, or 24 stretcher cases; 14,365lbs (6,516kg) payload
Length:	78ft 0in (23.77m)
Wingspan:	98ft 3in (29.95m)
Height:	30ft 1in (9.17m)
Empty Weight:	29,324lb (13,301kg)
Max Takeoff Weight:	51,000lb (23,133kg)
Fuel capacity:	1,440 imp gal (1,729 US gal; 6,546 L) fuel in integral wing tanks
Powerplant:	2 × Rolls-Royce RDa.12 Dart Mk 201 turboprop engines, 3,245shp (2,420kW) each equivalent
Propellers:	4-bladed Dowty Rotol, 14ft 6in (4.42m) diameter constant-speed fully-feathering reversible-pitch propellers
Performance	
Maximum speed:	278kn (320mph, 515km/h) at 15,000ft (4,572m)
Cruise speed:	235kn (270mph, 435km/h) at 40,000lb (18,144kg)AUW
Range:	1,239 nmi (1,426mi, 2,295km) with fuel for 200nmi (230mi; 370km) diversion and 30min holding
Service ceiling:	24,000ft (7,300m)

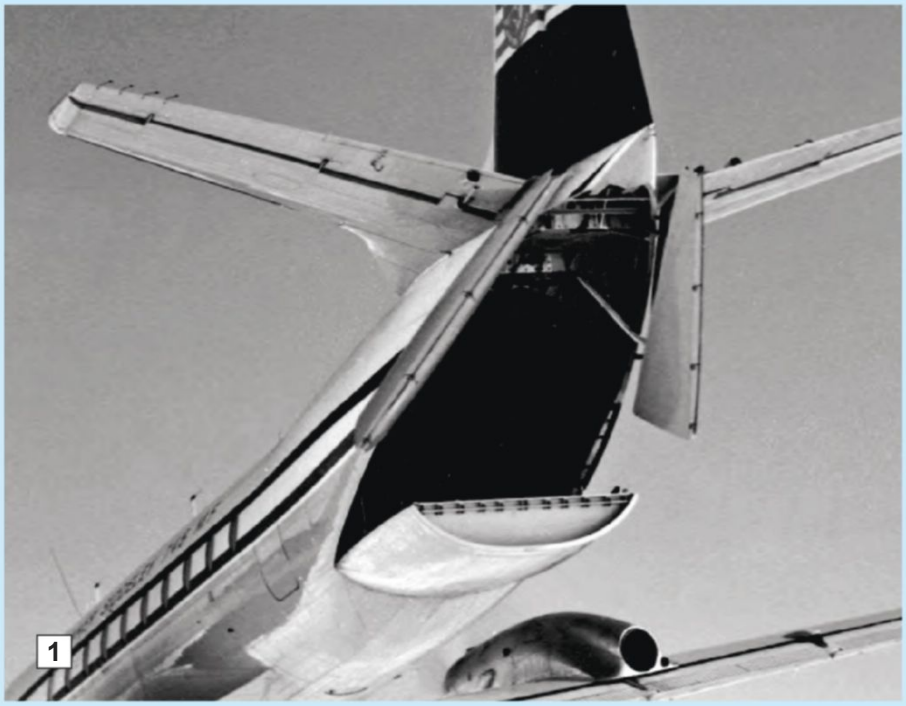
In Civilian Service

Although out of the scope of this *Warpaint*, several Andover C.1s were sold to civilian start-up cargo companies in Africa. Unfortunately due to lack of pilot experience and maintenance issues, most were either involved in accidents or withdrawn from use.

Production Ends

During 1988, production of the HS 748 was terminated, with the last British-assembled aircraft making its first flight on 1 December of that year. British Aerospace BAe then started producing an improved, stretched version they called the BAe ATP, which used Pratt & Whitney PWC 126/127 engines. Total production of this variant was only sixty-seven aircraft despite later marketing it as the 'Jetstream 61' and no military orders were received. According to BAe Systems, a successor company to Hawker Siddeley, during the type's production life a total of 381 aircraft had been produced, which included both the Andover and HAL-built examples.

HS748 and Andover IN DETAIL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All photos from the author's collection unless otherwise stated.

Andover C.1 & E.3

1. Rear doors close-up on prototype Andover in flight.

2. Loading an Andover C.1 in 'kneeling' position.

3. Nose detail on a 46 Sqn. Andover C.1 in 1967 showing Abingdon town shield badge.

4. Starboard tail of a 46 Squadron Andover C.1 in 1967.

5. 46 Sqn. RAF badge on port side of an Andover C.1's tail.

6. 115 Sqn. 75th anniversary tail markings on Andover E.3 XS605, June 1993.

7. Cockpit of RNZAF Andover C.1, NZ7621 (Ex RAF XS600) *(Richard Hamblin)*.

8. Rolls Royce Dart turboprop engine on Andover E.3A XS639 at RAF Cosford museum.

9. Nose detail on a 115 Sqn. Andover E.3 at Benson in 1986.

HS748 and Andover CC.2

10. The Large Freight Door on a Belgian Air Force HS748 in September 1976.

11. The Royal Cypher applied to both sides of the nose and rear on Queen's Flight Andover CC.2s.

11

HS748 and Andover IN DETAIL *continued*

12. Nose detail on a RAF Queen's Flight Andover CC.2 in 1986.

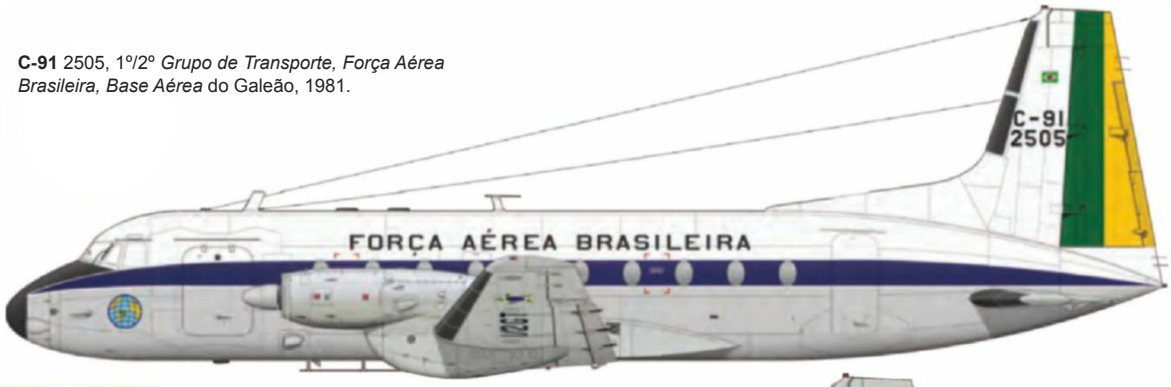
13. Queen's Flight Andover CC.2 tail markings in 1986 showing Day-Glo zaps from trips to Africa, Australia and Canada.

14. Underside detail on a Queen's flight Andover CC.2 in delivery scheme c. 1960s.

15. HS748 cockpit view.

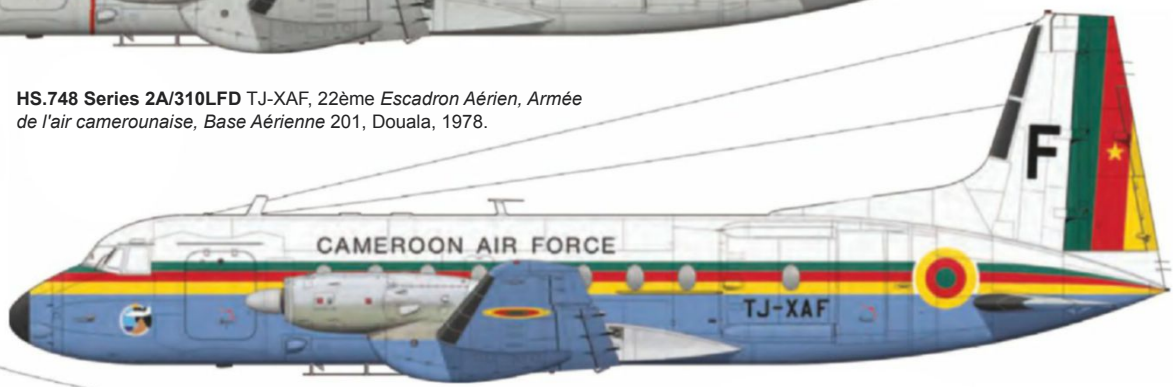
16. Cockpit and nose details on prototype AVRO 748, G-APZV, Farnborough September 1960.

C-91 2505, 1º/2º *Grupo de Transporte, Força Aérea Brasileira, Base Aérea* do Galeão, 1981.

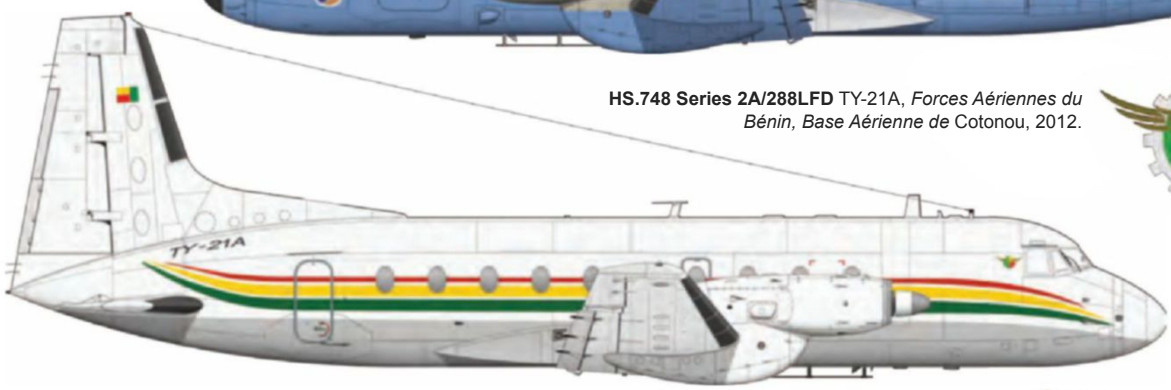


C-91 2510, 1º/2º *Grupo de Transporte, Força Aérea Brasileira, Base Aérea* do Galeão, 2004.

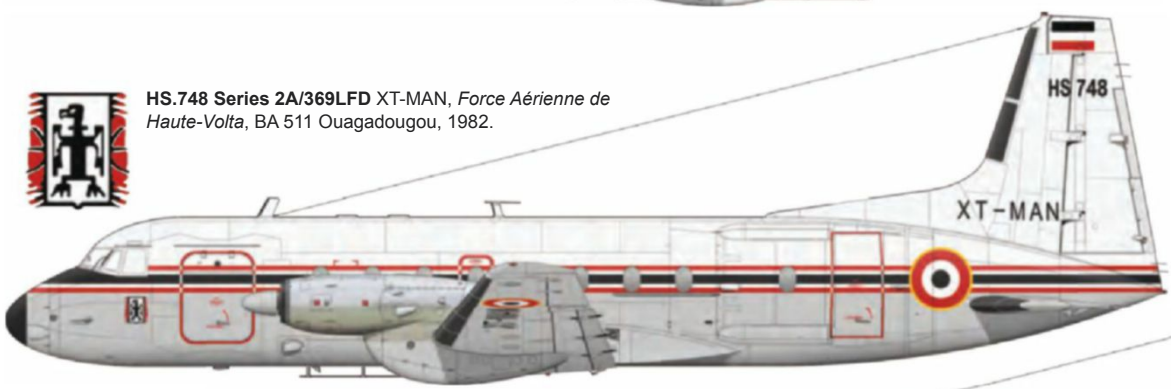
HS.748 Series 2A/310LFD TJ-XAF, 22ème *Escadron Aérien, Armée de l'air camerounaise, Base Aérienne* 201, Douala, 1978.



HS.748 Series 2A/288LFD TY-21A, *Forces Aériennes du Bénin, Base Aérienne de* Cotonou, 2012.



HS.748 Series 2A/369LFD XT-MAN, *Force Aérienne de Haute-Volta*, BA 511 Ouagadougou, 1982.

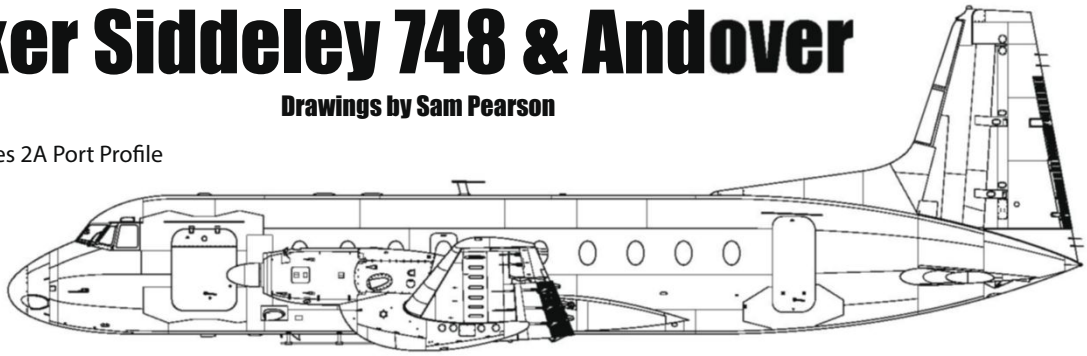


HS.748 Series 2A/320LFD XT-MAL, *Force Aérienne du Burkina Faso*, BA 511 Ouagadougou, 2002.

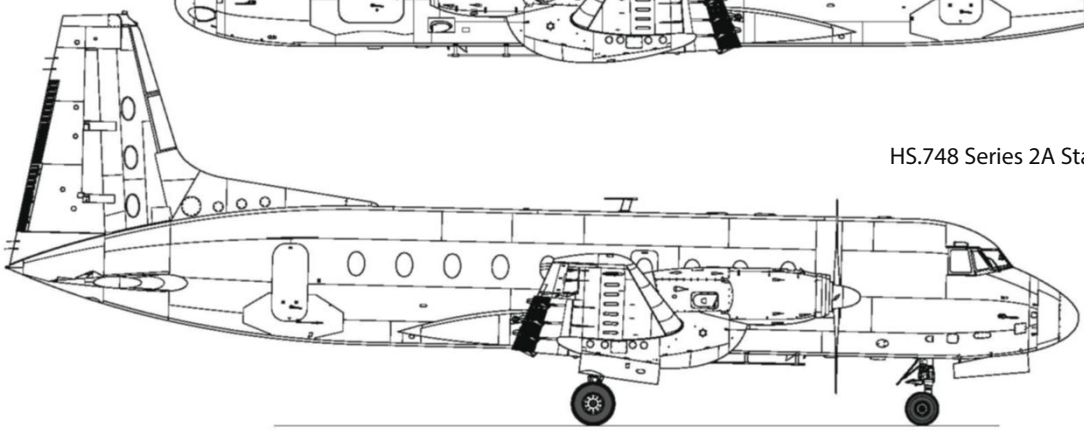
Hawker Siddeley 748 & Andover

Drawings by Sam Pearson

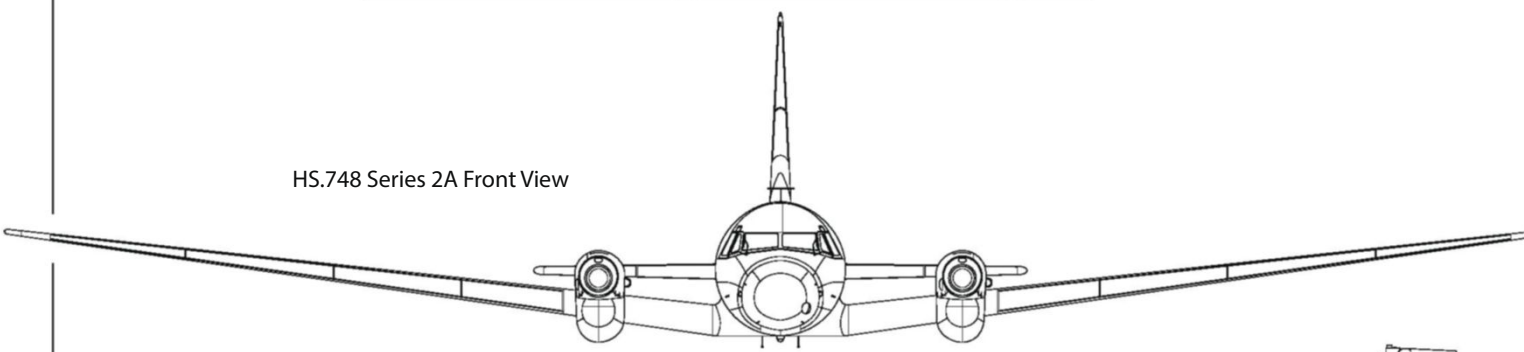
HS.748 Series 2A Port Profile



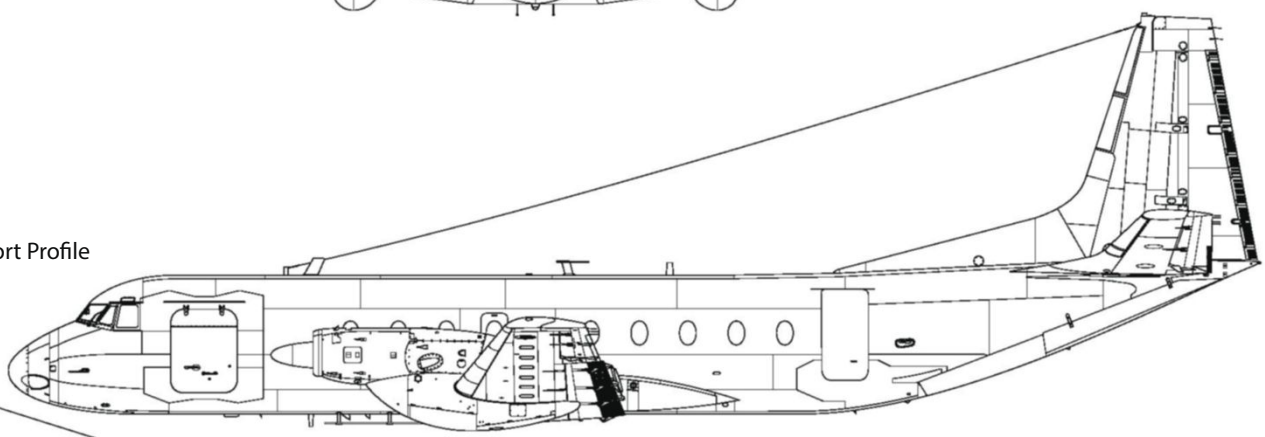
HS.748 Series 2A Starboard Profile



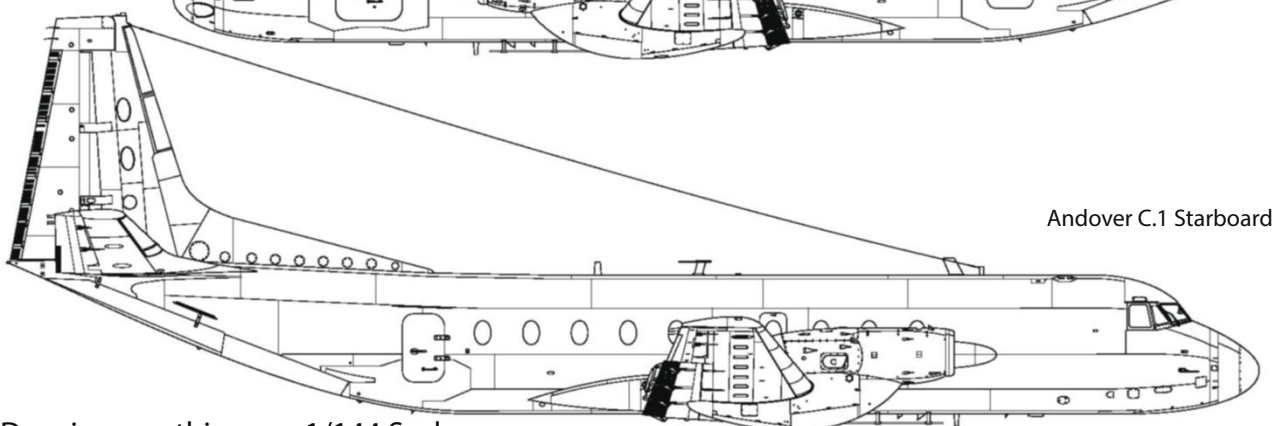
HS.748 Series 2A Front View



Andover C.1 Port Profile



Andover C.1 Starboard Profile



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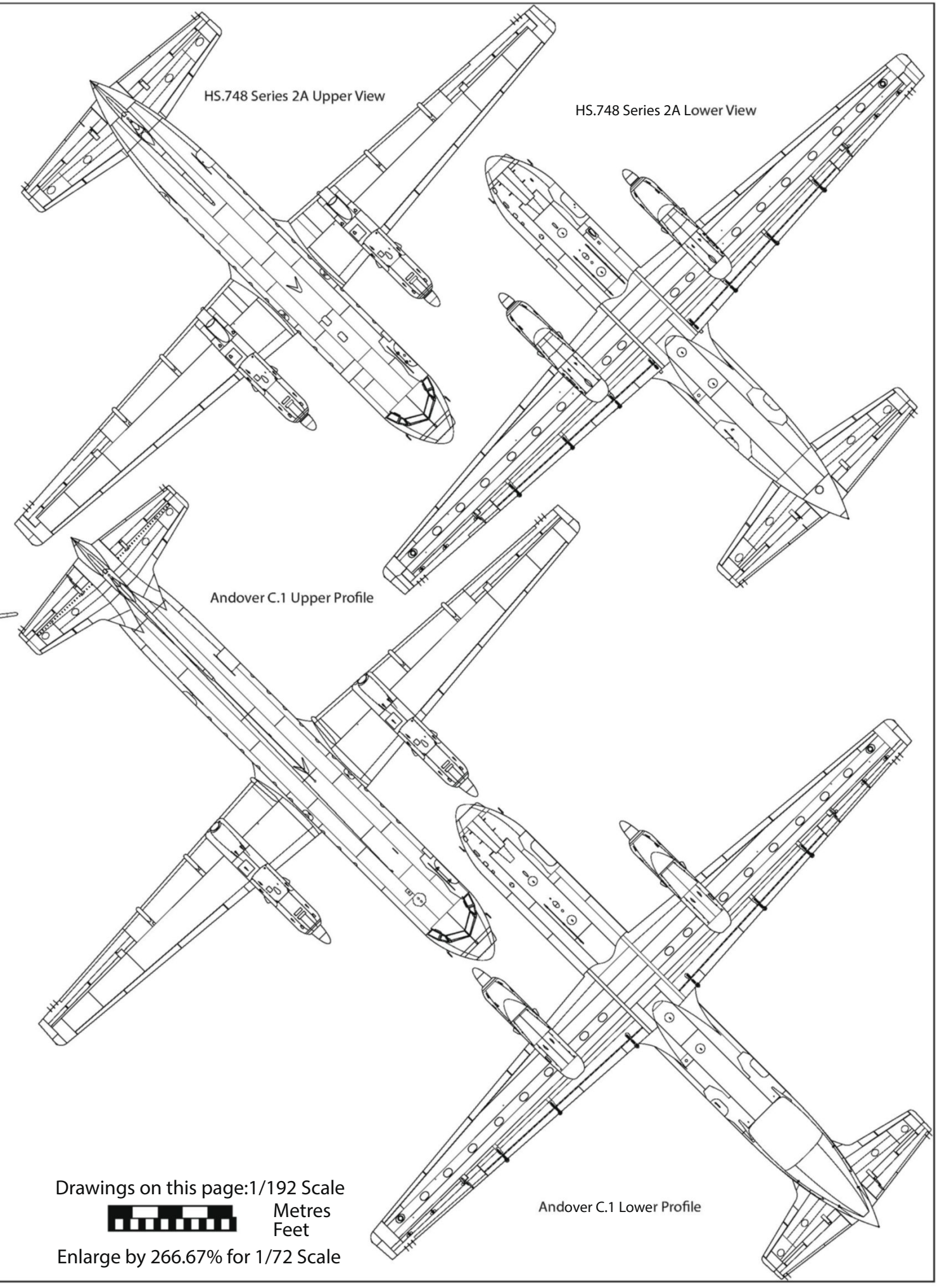

Drawings on this page:1/192 Scale

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HS.748 Series 2A/265 AF602, Zambian Air Force, Lusaka, 1983.

HS.748 Series 2A/314LFD JW9010, Tanzania Air Force Command, Dar es-Salaam, 1990.

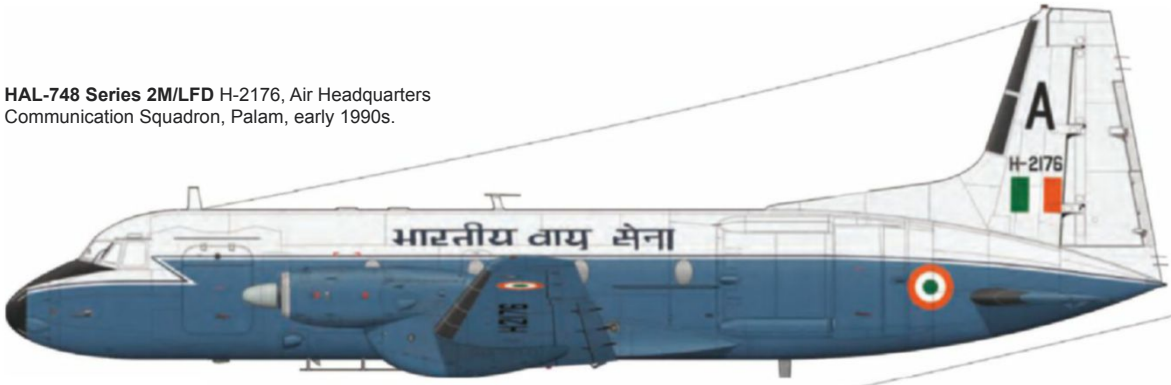
HS.748 Series 2A/273 AMDB-110, *Askar Melayu Diraja Brunei* (Royal Brunei Malay Regiment) Air Wing, Berakas Airport, 1971.

BL.5-3-26 60303, 603 Squadron, 6 Wing, Royal Thai Air Force, Don Mueang, July 2014.

HS.748 Series 2A/271LFD RAN-20, 11th Brigade, Royal Nepalese Army Air Wing, Kathmandu, 1999.

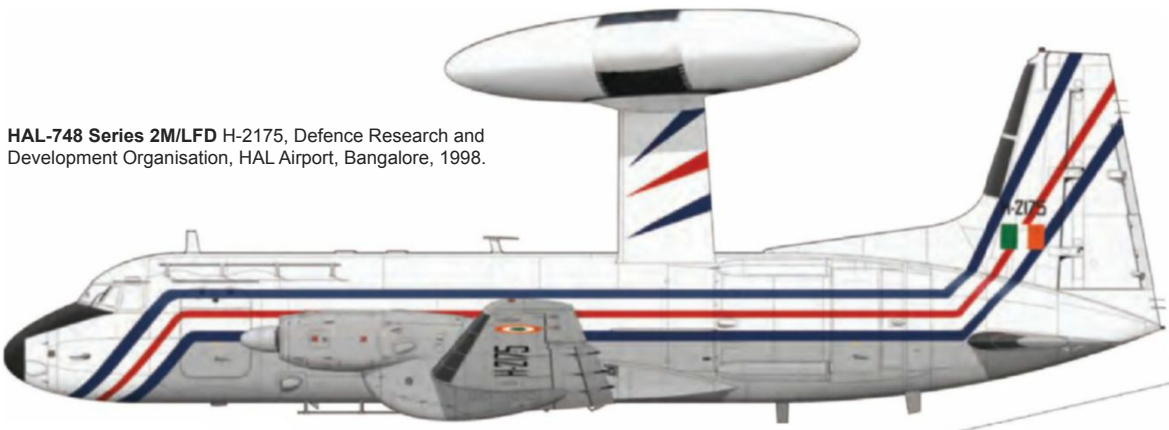
HS.748 Series 2A/272 CR-830, No. 2 Heavy Transport Squadron, Sri Lanka Air Force, Ratmalana, April 2002.

HAL-748 Series 2M/LFD H-2176, Air Headquarters Communication Squadron, Palam, early 1990s.

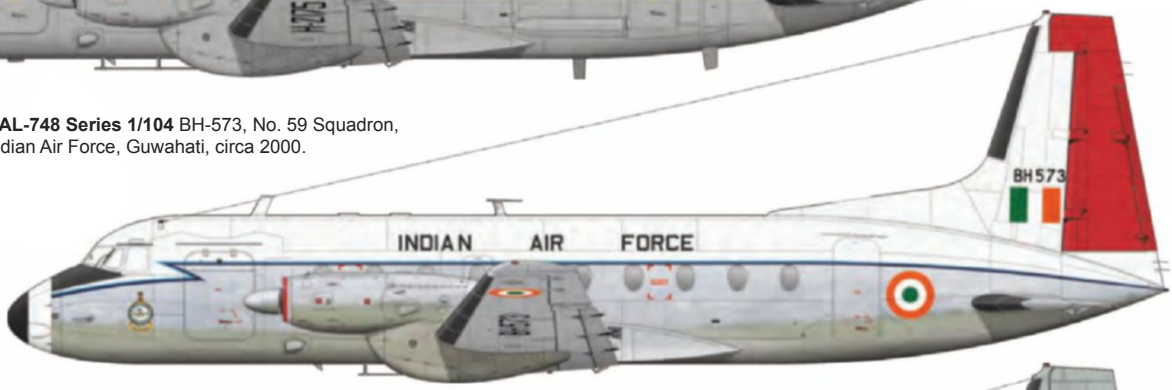


HAL-748 Series 2/247 H-1525, No. 11 Squadron, Indian Air Force, Sulur, circa 1996.

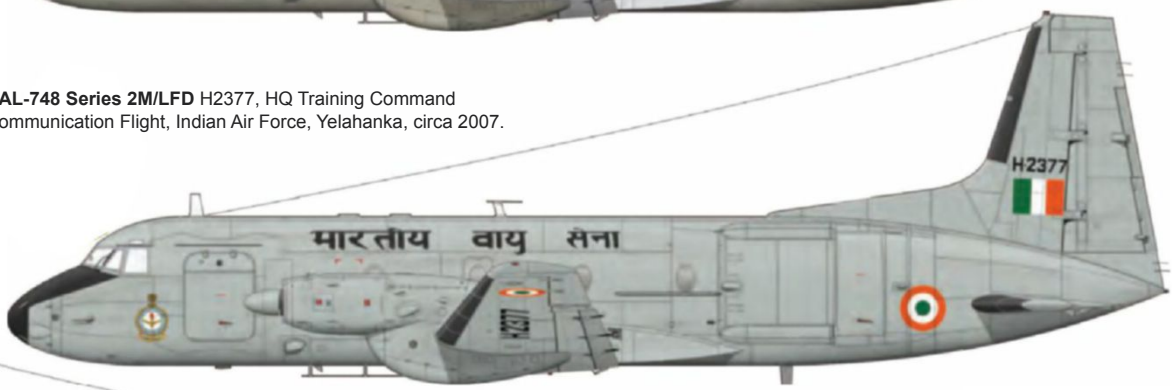
HAL-748 Series 2M/LFD H-2175, Defence Research and Development Organisation, HAL Airport, Bangalore, 1998.



HAL-748 Series 1/104 BH-573, No. 59 Squadron, Indian Air Force, Guwahati, circa 2000.

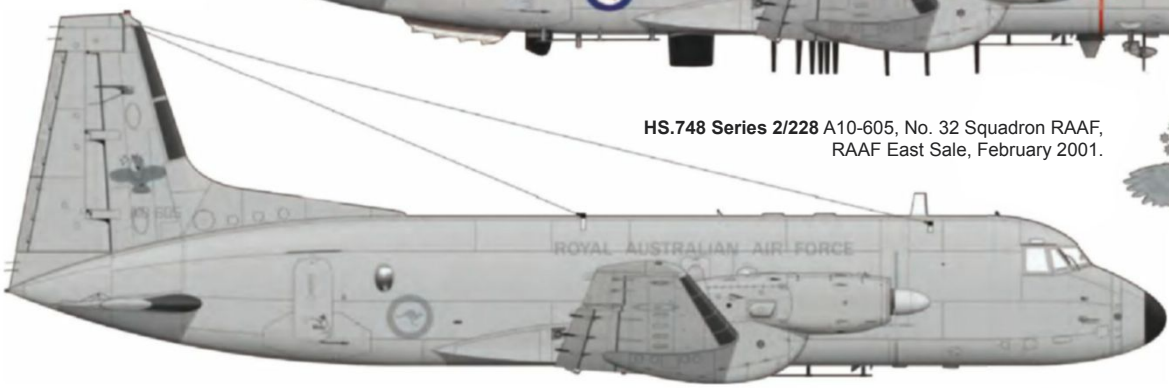


HAL-748 Series 2M/LFD H2377, HQ Training Command Communication Flight, Indian Air Force, Yelahanka, circa 2007.

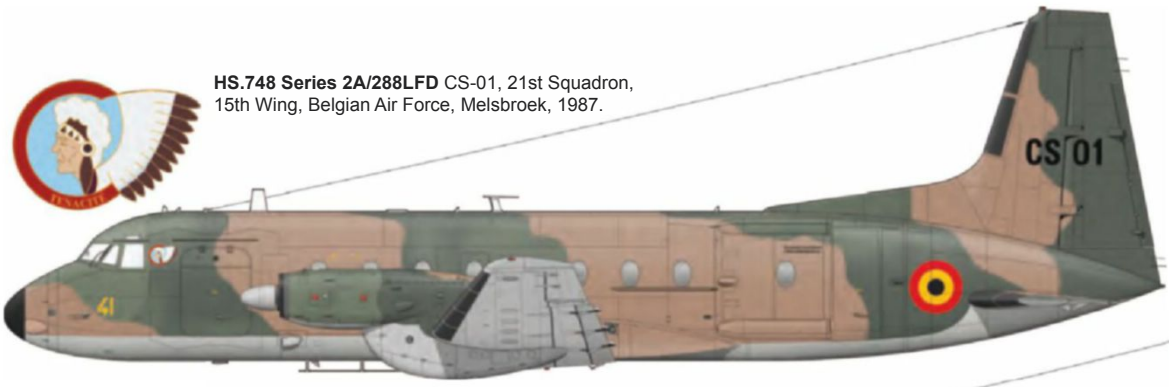


HAL-748 Series 1/103 BH-572, Hindustan Aeronautics Limited, HAL Airport, Bangalore, 2019.

HS.748 Series 2/268 N15-710, VC-851, Royal Australian Navy, HMAS Albatross, Nowra, September 1982.

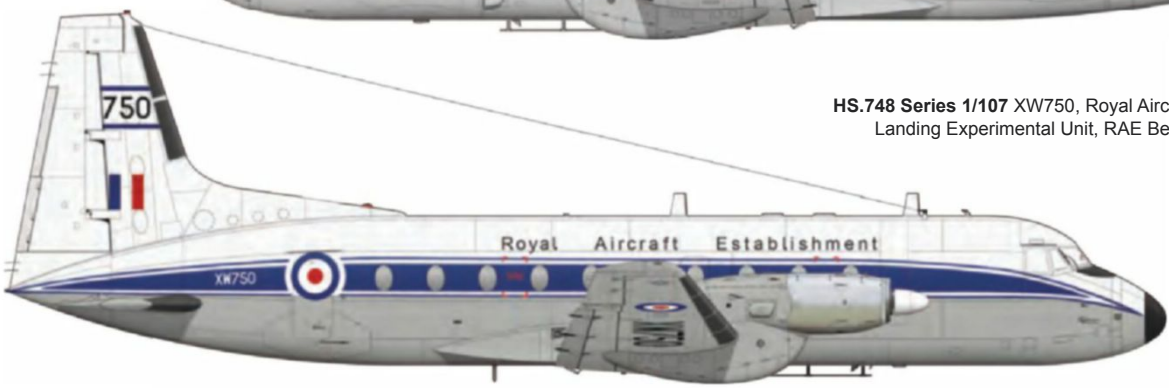


HS.748 Series 2/228 A10-605, No. 32 Squadron RAAF, RAAF East Sale, February 2001.

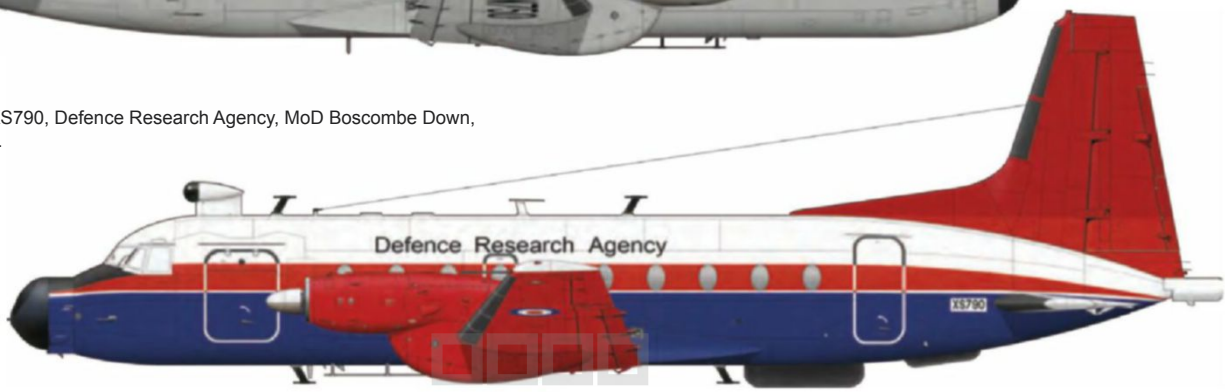


HS.748 Series 2A/288LFD CS-01, 21st Squadron, 15th Wing, Belgian Air Force, Melsbroek, 1987.

HS.748 Series 2A/288LFD CS-02, 21st Squadron, 15th Wing, Belgian Air Force, Melsbroek, 1997.

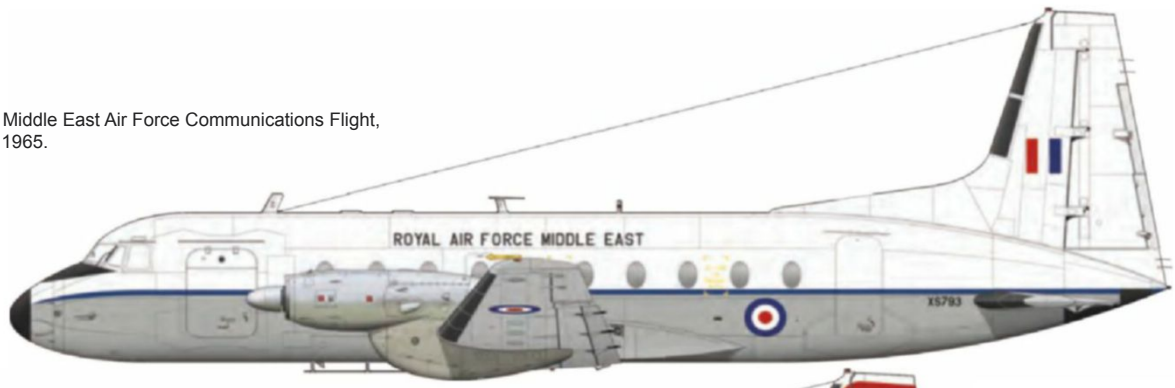


HS.748 Series 1/107 XW750, Royal Aircraft Establishment Blind Landing Experimental Unit, RAE Bedford (Thurleigh), 1980.



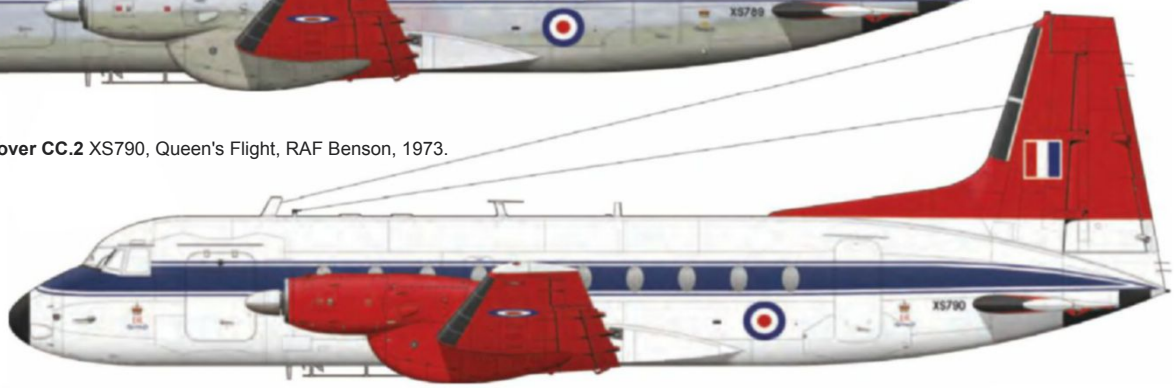
Andover CC.2 XS790, Defence Research Agency, MoD Boscombe Down, September 1995.

Andover CC.2 XS793, Middle East Air Force Communications Flight, RAF Khormaksar, April 1965.

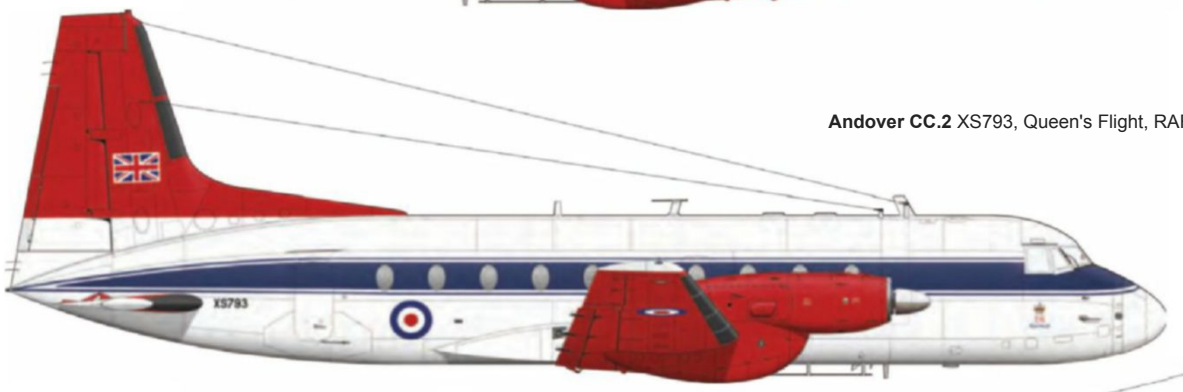


Andover CC.2 XS789, Queen's Flight, RAF Benson, 1965.

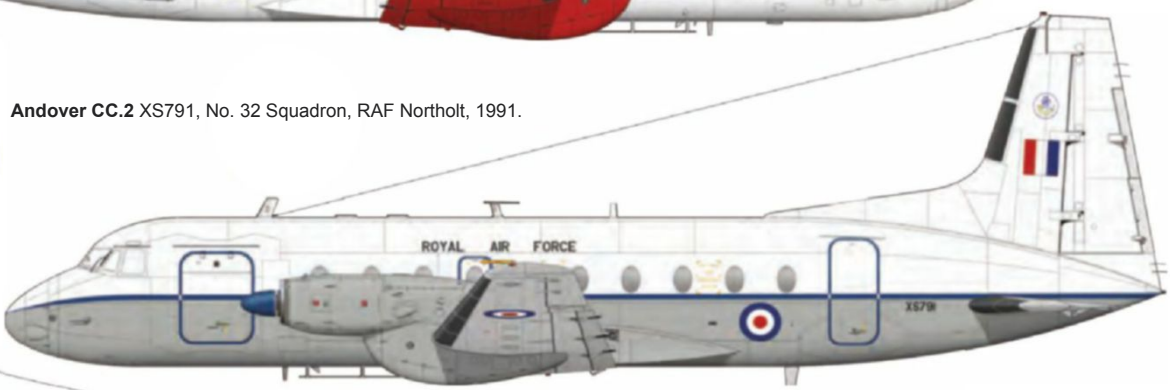
Andover CC.2 XS790, Queen's Flight, RAF Benson, 1973.



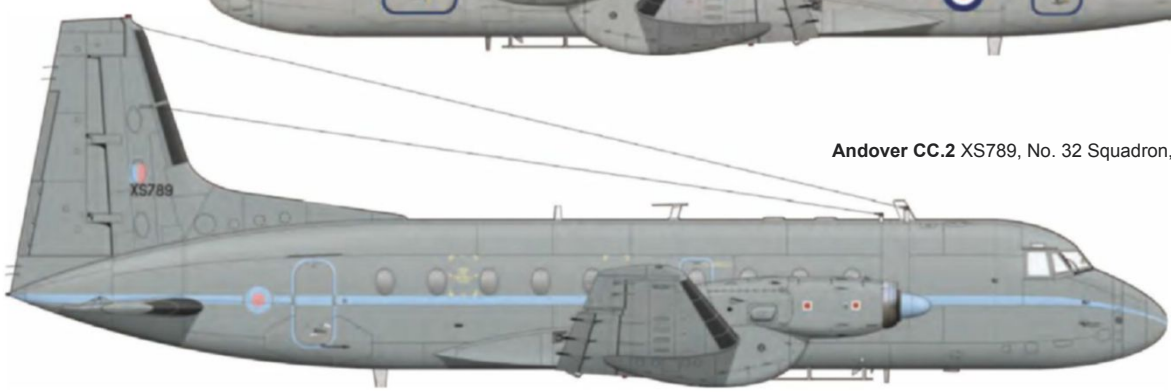
Andover CC.2 XS793, Queen's Flight, RAF Benson, 1980.

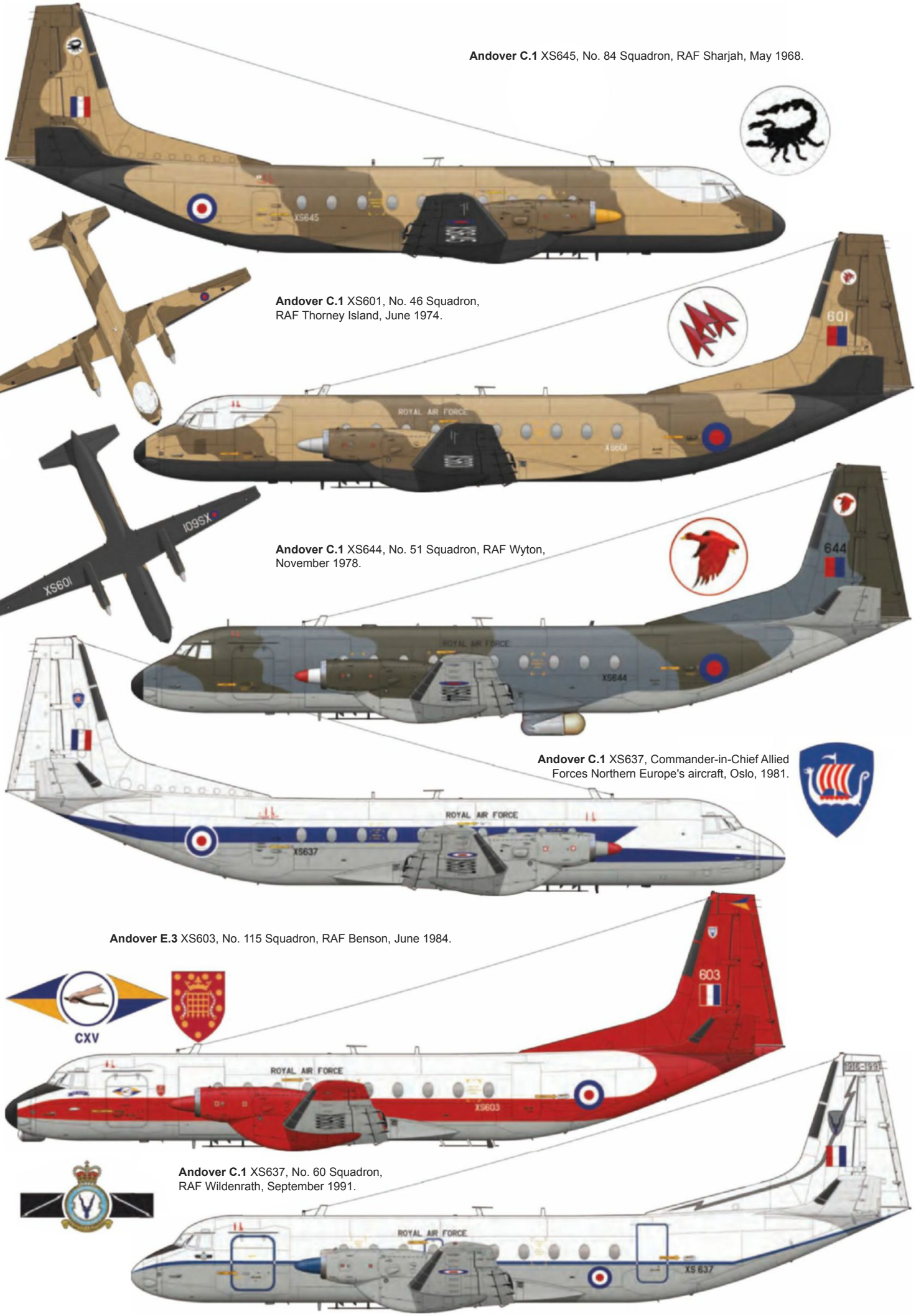


Andover CC.2 XS791, No. 32 Squadron, RAF Northolt, 1991.



Andover CC.2 XS789, No. 32 Squadron, RAF Northolt, 1994.





Andover C.1 XS645, No. 84 Squadron, RAF Sharjah, May 1968.

Andover C.1 XS601, No. 46 Squadron, RAF Thorney Island, June 1974.

Andover C.1 XS644, No. 51 Squadron, RAF Wyton, November 1978.

Andover C.1 XS637, Commander-in-Chief Allied Forces Northern Europe's aircraft, Oslo, 1981.

Andover E.3 XS603, No. 115 Squadron, RAF Benson, June 1984.

Andover C.1 XS637, No. 60 Squadron, RAF Wildenrath, September 1991.

Andover E.3A XS643, No. 32 Squadron, RAF Northolt, February 1993.

Andover C.1 XS606, Empire Test Pilots' School, MoD Boscombe Down, February 2004.

Andover C.1 XS646, QinetiQ, MoD Boscombe Down, March 2009.

Andover C.1 NZ7622, No. 42 Squadron RNZAF, Whenuapai, 1982.

Andover C.1 NZ7620, No. 42 Squadron, RNZAF, Whenuapai, 1984.

Andover C.1 NZ7627, No. 42 Squadron, RNZAF, Whenuapai, September 1997.

Above: Andover C.1s of 46 Squadron, RAF Air Support Command on the flight-line at RAF Thorney Island in September 1970.
(Martin Fenner collection)

Below: Royal Thai Air Force HS748s 60303, 60305, and 60301 of 6 Wing lined up on the apron at Don Muang Air Base, Bangkok in March 2004.
(Tom Singfield collection)

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